GRAW-HILL CO. of CALIFORNIA SEPTEMBER 1935 PRICE 25c PER COPY

ELECTRICAL WEST

"PLUG IN" STRIP
Offers life-time wiring adequacy to all existing buildings. A simple, safe, convenient, continuous base-board strip with outlets or "plug-ins" every six (6) inches.
Unlimited instead of restricted use of electric current with "Plug-In" Strip in new buildings—offices, apartments, stores, homes. Enduring, concealed, yet surface outlets blending artistically with room finish. Catalog upon application.
NATIONAL
ELECTRIC PRODUCTS
NE
WIRING SYSTEMS
WIRES AND CABLES
National Electric
PRODUCTS CORPORATION
Pittsburgh, Pa.

On one end of the electric lines which spread over Central and Southern California, is a hydro-electric or steam plant of the Edison Company—on the other end an electrical appliance. One is useless without the other.

If it were not for the hundreds of thousands of electric ranges, refrigerators, water heaters and other electrical household helps, sold and installed in the homes by dealers, we would not be the institution we are today . . . we could not maintain the low rate made possible by large production . . . we could not employ as many men.

Being fully aware of the value of your efforts, we can show our appreciation only by continuing a steady, well-planned promotion campaign, thereby contributing to your prosperity as well as to the progress of the communities we serve.

Edison

SOUTHERN CALIFORNIA EDISON COMPANY LTD.

9-35

ELECTRICAL WEST (with which is consolidated The Journal of Electricity), September, 1935, Vol. 75, No. 3. Published monthly by the McGraw-Hill Company of California, 883 Mission St., San Francisco, Calif. Entered as second class matter at the post office at San Francisco under the Act of March 3, 1879. Additional entry as second class matter at the post office at Los Angeles. Printed in U. S. A. Subscription rate in U. S. and U. S. possessions, $2 per year; Canada, $2.50 including duty; all other countries $3 gold (thirteen shilling). Single copy, 25c. Copyright, 1935. McGraw-Hill Company of California.

ELECTRICAL WEST

With which are consolidated the "Electrical Journal," the "Journal of Electricity, Power and Gas," and the Journal of Electricity."

ESTABLISHED 1887

Staff

George C. Tenney, Editor
W. A. Cyr, Associate Editor
C. W. Leihy, Engineering Editor
Roy N. Phelan, Manager
Hans Hjorth, Typography

▼

Editorial Advisory Board

Utilities:

R. E. Fisher, Vice-President in Charge of Public Relations and Sales, Pacific Gas and Electric Company, San Francisco

J. A. Hale, Chief Engineer, Utah Power & Light Company, Salt Lake City

Glenn L. Jackson, Vice-President and Commercial Manager, The California Oregon Power Company, and Mountain States Power Company, Medford

Frank McLaughlin, President, Puget Sound Power & Light Co., Seattle

L. T. Merwin, Vice-President and General Manager, Northwestern Electric Company, Portland

W. C. Mullendore, Executive Vice-President, Southern California Edison Company Ltd., Los Angeles

Manufacturers:

Vernon Brown, President, Square D Company, Inc., Los Angeles, Calif.

W. R. Marshall, Vice-President, Westinghouse Electric & Mfg. Co., San Francisco

A. S. Moody, Northwest Manager, General Electric Company, Portland

Wholesalers:

J. I. Colwell, Northwest Manager, Graybar Electric Co., Inc., Seattle

N. W. Graham, Graham-Reynolds Electric Co., Los Angeles

Contractors:

Lloyd Flatland, Globe Electric Works, San Francisco, Calif., 12th Regional Chairman, Electrical Contracting Code Authority

S. G. Hepler, Arrow Electric Co., Seattle, 11th Regional Chairman, Electrical Contracting Code Authority

Dealers:

H. H. Courtright, President, Valley Electrical Supply Company, Fresno

J. C. Chamberlain, Secretary-Manager, Bureau of Radio and Electrical Appliances, San Diego

▼

McGraw-Hill Company of California

883 Mission Street
San Francisco, California

Publishers of

ELECTRICAL WEST

James H. McGraw, Chairman of the Board
R. A. Balzari, Vice-President and General Manager
George C. Tenney, Vice-President
Roy N. Phelan, Secretary and Treasurer

Member, Audit Bureau of Circulation
Member, Associated Business Papers, Inc.

Copyright 1935 by McGraw-Hill Co. of California

Contents for September 1935

Volume 75 Number 3

We Seek Further Improvement 21
Light Marches On 22
Cooperation on Parade 34
Bill Jones Speaks About Reversing the Ladder 39
Rural Load Building 40
Business Building Brainstorms 42
Engineering Symposium ... 44
Realm of Science 49
Trade Associations 51
Editorials 52
News of Note 54
Where to Buy It in the West 66

▼

• LIGHT MARCHES ON! As Fall skies darken the need for more light becomes manifest. It is during this period of appreciation of the need for light that the lighting legions of the industry may advance with greatest success to their efforts, and most benefit to the public. In order to give those whose interests lie in lighting—and truly whose are not affected by lighting?—a review of what has been accomplished during the past season and a forecast of what is proposed for the coming season, this issue devotes many pages to such reports. Because of space limits many items of interest in even these reports necessary were omitted, but will be reported in later issues.

• THOSE WHO HAVE LIGHTING equipment to sell should organize their efforts to follow in the path blazed by the efforts of the utilities and manufacturers. A national interest in eyesight and seeing should not be left to wonder from whence relief from darkness is to come. It is our industry's job to make it easy to see by making it easy to buy good lighting. Therefor make full use of the special and comprehensive data on lighting in this lighting number.

NEXT MONTH

• SOMETHING ABSOLUTELY UNIQUE for those who deal in electrical appliances is promised next month. Finding a need by dealers everywhere for a concise, easy-to-use, basic guide to display and salesmanship of electrical appliances, ELECTRICAL WEST is boiling down into the simplest form ever used, the ideas, advice, and experience of 75 of the West's best brains in appliance selling. We have recruited the sales managers and representatives of as many appliance and merchandising organizations as we could reach to focus their attention on this job.

• AN APPLIANCE SALES MANUAL will be the result—an entirely different and new—and *useful*—manual it will be. Plan to use it in Christmas selling, and all next year as well.

Sales Talks that SOLD Appliances

CASE HISTORY NO. 9

Selling BETTER LIGHT

BILL SMITH, MASTER SALESMAN, knows that home lighting offers one of the largest fields in which the electrical dealer can sell profitably. He has decided that he can use home lighting to build both sales volume and a larger clientele of satisfied customers if he will scientifically sell this needed service to his patrons. So he has invested in a sightmeter and has utilized some of the room formerly devoted to fixture displays to build a simple 10x12-ft. demonstration room in which he also has placed a portable light-sight demonstrator where the customer can select the level of illumination best suited for his eyes. Follow him through a sale and see if you don't agree that his small investment pays big dividends in sales volume and satisfied customers.

Bill has just finished wrapping up a carton of lamps for a lady who walked into his store to make the purchase. From her appearance and manner he judges that she is well educated, cultured and in the medium income family group. He decides to try and develop a prospect for home lighting.

BILL: *(pleasantly)* "Undoubtedly you must have thought how important electric light is to the health and comfort of your family. This relation of correct light to vision and health has been proved by scientific tests and our company has installed a light 'fitting room' to give our customers the benefits of accurate recommendations on their lighting problems. Some of the equipment in our demonstration room is most interesting. May I show it to you?"

PROSPECT: "I have only a few minutes, but I would like to see it. There has been a great deal about Better Light-Better Sight in the women's magazines and I really feel that I ought to know something about it."

BILL: *(Showing the prospect into the demonstration room which is lighted and furnished about as an average home. He seats her in a comfortable chair and introduces himself and finds that she is Mrs. Warner.)* "Science has proven that 87 per cent of our knowledge is received through our eyes. That is what makes lighting so important." *(He picks up a sightmeter from the table.)* "This little device is one of the most important tools we have because it measures the light at any point it is laid down." *(He sets it on the arms of the chair.)* "You see, the needle points to 3. Now, *(snapping on the bridge lamp alongside of the chair)* with this light the needle jumps to 10. This is the light that most people read under."

MRS. W.: "Yes, that is the way we read at home. I believe in having good light for reading."

BILL: *(Smiling)* "Now if you'll step over to this little booth we'll check and see just how much light your eye require for comfortable reading." *(He puts a book inside the booth and turns on all of the concealed lights.)* "This booth is arranged so that I can adjust the light until you find the most comfortable reading light."

MRS. W.: "Oh, this is much too bright."

¶ Bill adjusts the intensity until his prospect is satisfied and then puts the sightmeter alongside the book and asks her to read it.

MRS. W.: "Why it reads between 100 and 125. Is there actually that much difference between this light and that under the bridge lamp?"

BILL: "It doesn't seem possible, does it, but this light is the amount necessary for your eyes to read without strain. To sew or read without adequate illumination is very harmful to the eye and such a strain generally manifests itself as headache, nervousness or great physical fatigue. It takes almost as much energy to sew under poor light as it does to perform manual labor. Children, especially, need good light both to preserve their eyes and to conserve energy. Do you know that over 30 per cent of the college students suffer from eye defects most of which are directly traceable to working under improper light during their childhood?"

¶ Demonstrations, like the Chinese proverb of picture, are worth 1,000 words. When supplemented with a good sales talk, they are invaluable as a means of creating interest and desire in a prospect's mind. Notice how quickly Mrs. Warner's interest is stimulated by the mention of the effect of poor light on children's vision.

MRS. W.: *(Surprised)* "Is that so! I have one boy in high school and another in the grades and I certainly wouldn't want them handicapped by poor vision later in life if it could be prevented. But how can proper light be provided? All my fixtures and floor lamps are used now."

BILL: "That's where the new Science of Seeing can help by showing you how to use your present lighting installation more effectively. I can show you right in this room. *(Bill snaps on a 300-watt indirect floor model lamp in one corner of the room*

and a study lamp on the table in the opposite corner). These two lamps have been designed by the Illuminating Engineering Society, a professional society of trained engineers, to make seeing comfortable and safe in your home. Notice how soft the light is, yet *(taking the sightmeter around the room)* you can see that almost every place the meter registers between 8 and 10. There is almost eight times as much light as before, but the room doesn't appear too bright. *(He walks over to the study lamp.)* That's because these units are designed to throw the light upward toward the ceiling where it is diffused over the room. It gives a light of high intensity, but your eyes don't notice it because there is no glare, glare being as hard on the eyes as is poor lighting. This lamp *(indicating the table model)* is correctly designed for study purposes as it illuminates both the work directly through this translucent bowl and the room itself. The first step toward better illumination is to raise the general lighting level of the room with the soft diffused light, thrown off by the units which plug right into your outlets. Easy, isn't it?"

MRS. W.: "It certainly is, and now that I see how pleasing it is, I believe I like the extra light although I always felt that my living room looked best with the center fixture off and just our bridge and table lamps on."

BILL: "There is a scientific answer for that, too. Your eyes are constantly drawn toward a bright glaring light source which tires them quickly. Because you tire rapidly under such a light, unconsciously you decide that you don't like it. The same is true if you read under a bridge lamp with the rest of the room dark. The contrast requires continual adjustment of the eye which becomes fatigued. With the rest of the room lighted as it is now, the contrast is eliminated and the individual lamp can be used to raise the illumination to a safe value for comfortable reading. You probably have spent hundreds of dollars on your rugs, furniture, and drapes, carefully choosing color combinations, patterns and styles to make your rooms warm, pleasant, comfortable places for your family and guests. Yet in many homes all of this effort to improve the appearance of the room is lost because the lighting is so dim as often to make articles of furniture indistinguishable. Perhaps you'll see what I mean if I turn off the indirect units. *(He does so and turns on several attractive table and bridge lamps around the room.)* Now notice that practically all of the color and warmth of the decorations are lost. When I turn these units back on, not only is the room brightened but also these smaller lamps appear much softer and actually become decorative color spots which add immeasurably to the cheeriness of the place."

MRS. W.: "It really does appear a much more pleasant place, and do you know that I find it really difficult to see well with just the small lamps on?"

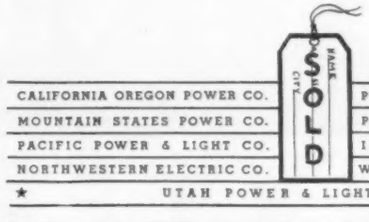
BILL: "Why not try reading again with the improved lighting? *(He seats her in the chair and gives her the book.)* We'll measure the light again. Now you see that the meters read 40. That's a safe light for your eyes. With lamps of the proper wattage in your present fixtures and with two of these I. E. S. reading lamps, you very probably could bring the lighting of your living room up to a comfortable and safe level for satisfactory vision and at the same time add to the beauty of your room and safeguard the eyesight of your family."

MRS. W.: "I hadn't realized just how much progress had been made in lighting until I came here. Does it cost very much to put more light in a room?"

BILL: "It is really very inexpensive because one or two of these indirect units in the average size room will generally be adequate to raise the general level of illumination to a safe value. Then by supplementing the points where more light for safe reading or other exacting eye work is performed with larger-sized lamps in your present fixtures or with these new inexpensive pin-it-up lamps you can be sure of correct illumination. These individual lamps *(indicating the pin-it-up type)* are very useful as they can be placed exactly where the light is needed merely by pushing this one pin in the wall. They also come in many beautiful designs which will add to the appearance of any room. Of course, I cannot conscientiously recommend what lighting units you need until I have seen your room. May I bring several of these units out to your home and check up on your lighting? Naturally, there is no charge for this service. In that way we can determine just how much additional light you need in your home for greater comfort and assured protection for the vision of your family."

MRS. W.: "I really think that would be a good idea. I would like to see if my room would look as attractive as this one with the additional light."

¶ Bill has won the confidence of his prospect by not trying to sell her until he is sure of what she needs. Furthermore, no mention of price has been made; Bill has sold only the advantages of better lighting and they have become so important in the prospect's mind that price has become secondary.

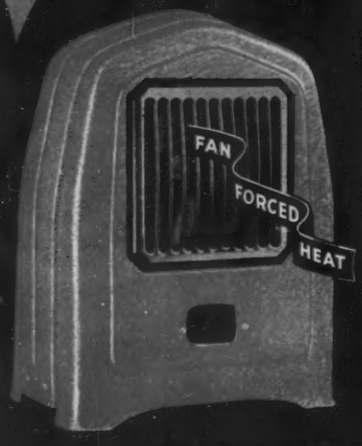


CALIFORNIA OREGON POWER CO. | PORTLAND GENERAL ELECTRIC CO.
MOUNTAIN STATES POWER CO. | PUGET SOUND POWER & LIGHT CO.
PACIFIC POWER & LIGHT CO. | IDAHO POWER COMPANY
NORTHWESTERN ELECTRIC CO. | WASHINGTON WATER POWER CO.
★ UTAH POWER & LIGHT COMPANY ★

✓APPROVED

✓BY DEALERS WHO HAVE TAKEN ARVIN PROFITS FOR 4 YEARS

✓BY THOUSANDS OF NEW USERS EVERY YEAR



No. 200 DE LUXE $8.95

No. 100 STANDARD $6.95

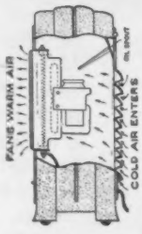
● **Stock Arvin Fan-Forced Electric Heaters — show them to your customers! You'll *sell* them — you'll *profit* — for every customer *wants* an Arvin!**

Arvin provides comfortable circulation of warm air in the office, bathroom, nursery — *wherever* extra or temporary heat is needed. Arvin Electric Heaters are portable — handy for the whole family. Their sturdy, attractive construction makes them right at home among furnishings of living room or office. Mothers find Arvin's gentle heated breeze particularly helpful for baby's bath. And baby is perfectly safe, for the Arvin fan and heating unit are completely enclosed. Arvin quickly takes the morning chill from the bathroom — a boon to early risers.

Call your Arvin jobber — or mail coupon at the bottom of this page.

Arvin Heaters give absolute satisfaction to every user. Cabinets are made of heavy gauge steel — are durable, yet not too heavy. Finished in green morocco enamel, they look well in any room. And they're safe, even for children, for heating unit and fan are both fully enclosed.

NO RADIO INTERFERENCE — The fan is driven by a small induction-type motor — has no brushes, springs, or commutator — does not interfere with radio reception — requires no attention other than a few drops of oil two or three times a year — operates on 110-120 volt 60 cycle A. C. Air is drawn in through louvers in back — is heated as it passes through the nichrome helical-type heating coil — and is forced out into the room as a gentle warm breeze.



Approved by leading authorities — the Good Housekeeping Institute, and the Underwriter's Laboratory

NOBLITT-SPARKS INDUSTRIES, INC... COLUMBUS, INDIANA

Also Makers of Arvin Hot Water and Steam Car Heaters and Arvin Car Radios

ARVIN FAN-FORCED ELECTRIC HEATERS

NOBLITT-SPARKS INDUSTRIES, Inc., Columbus, Ind.: Send us full information on Arvin Fan-Forced Electric Heaters.
Check whether you are Jobber ( ) or Dealer ( )

FIRM NAME..... **ADDRESS**.....

There never will be a more effective time than September 16 to 28 for you to display and feature the new Toastmaster merchandise.

Into those two weeks Toastmaster is crowding fourteen million individual consumer advertisements—the greatest concentration of advertising ever put behind Toastmaster.

Featured in this advertising will be the new Toastmaster Hospitality Tray with all its sparkling new features, and you may be sure many of your customers will be interested by it.

Plan your department and window displays and store advertising to tie in with this event—September 16 to 28. Display Toastmaster Hospitality Tray in a number of departments to take advantage of traffic throughout the store and increase sales. We will gladly furnish, on request, display and advertising material in quantities sufficient for each department showing.

McGRAW ELECTRIC COMPANY
Waters-Genter Division
Minneapolis Minnesota

with new HOSPITALITY TRAY

TOASTMASTER

SELLING with a SMILE..
HOT WATER.. do you GET IT, or a pain in the neck?
HOT WATER SHORTAGE
ou BLOW UP?
THERE'LL BE A HOT TIME IN THE COLD PIPES TO
Does getting HOT WATE
BUFFALO YOU?
"WE CAN'T," SAID PETE "WE CAN" SAID POLLY
OLD WATER keeping you all IOT AND BOTHERED?
7 P.M.
10 P.M.
In Your Home... HOT WATER a PIPE DREAM?
When there's NO HOT WATER do you see Red?
when the water runs COLD
OUCH!
Does the CK of HOT WATER
COLD WATER gives Jimmy a HOT IDEA
Folks are happy to buy Water Heaters with tanks that cannot rust...Whitehead Monel Metal Tanks...Guaranteed for 20 years!
A HOUSEHOLD WORD, that's what Monel Metal has become, due to eight years of national magazine advertising now helped along by high-spot newspaper campaigns.
All through the west, especially where the water supply has its source in melting mountain snows, the largest single cause of water-heater failure is rust. And, of course, no Monel Metal tank can ever rust.
Therefore, there's no tank failure, no tank-caused rust in the hot water supply, and consequently, no string of service calls caused by rust attacks.
That's why the Whitehead Monel Metal tank has been adopted by WESIX, by HOTPOINT, and by WESTINGHOUSE.
If you are interested in any of these makes of water heaters, write. You'll receive details of advertising team-play, examples of successful newspaper campaigns, and the names and addresses of men in the appliance business who will gladly tell you about their experience with water heaters that offer protection against rust. Address the Whitehead Metal Products Co. of New York, Inc., 304 Hudson Street, New York, N. Y.
THE INTERNATIONAL NICKEL COMPANY, INC.
67 WALL STREET
NEW YORK, N. Y.
MONEL METAL
Monel Metal is a registered trade-mark applied to an alloy containing approximately two-thirds Nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

MODERN

The NEW Standard G-E Distribution Transformer

Contributes to higher standards of service at lower operating costs

Has these important electrical and mechanical improvements

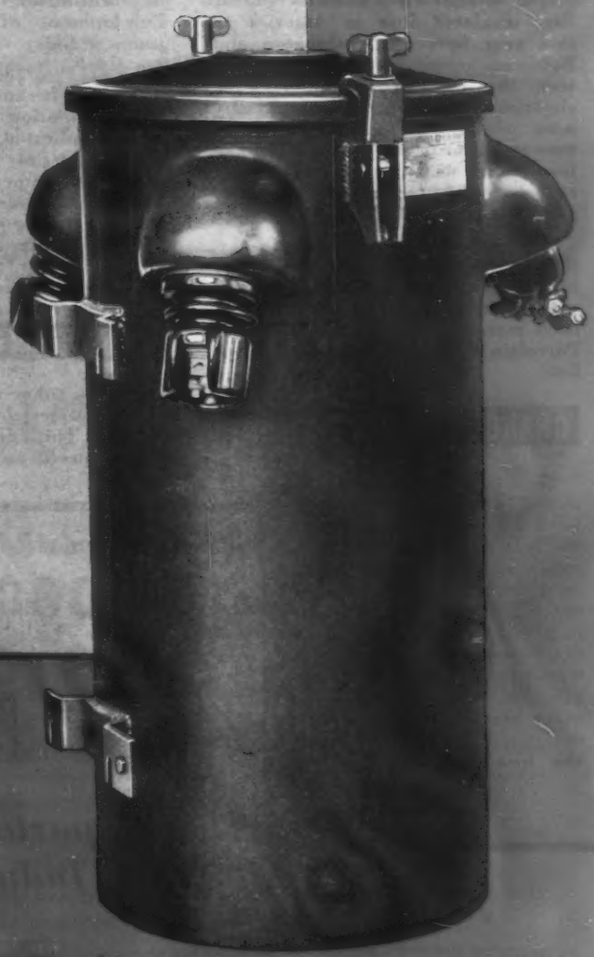
New Electrical Design

1. Materially increased dielectric strength
2. More uniform distribution of impulse strength throughout the windings
3. Improved regulation

New Mechanical Structure

1. All-steel unit-clamping structure
2. Improved wet-process-porcelain bushings with clamp-type solderless connectors
3. Weatherproof Glyptal finish—unusually tough, baked on

Ask for Leaflet GEA-2084
General Electric, Dept. 6-201, Schenectady, N. Y.



300-25

These New Transformers Are Also Available with
SELF-CONTAINED LIGHTNING PROTECTION
By True Valve-type Lightning Arresters
Ask for Leaflet GEA-2077A

GENERAL ELECTRIC

KING of ALL

electrical insulation materials

PORCELAIN

for proof — Look at History!

No man in 1843, even Professor Morse himself who constructed the first insulated line in America in that year between Washington and Baltimore, could have possibly foreseen the modern development of electrical insulation. Nor could any man vision the seemingly insurmountable problems of high voltage insulations which were later to be solved by that king of all insulation materials . . . PORCELAIN.

However, the unequaled insulation qualities of PORCELAIN began to be recognized as early as 1860 when porcelain is known to have been manufactured by the Southern Porcelain Co. at Kaolin, South Carolina.

CHANGED WORLD HISTORY

Then in 1882 Deprez transmitted power over an insulated line thus foreshadowing the real development of porcelain insulators which began in 1900. With the turn of the century, Porcelain began to play its historic role in the development of generation, transmission, control and application of electricity. No other material then available or later developed had all of the insulation qualities required for the development of electricity as the servant of mankind. Porcelain literally changed the course of world history . . for without it the development of electricity as we know it today would have been impossible!

Today, because Porcelain's electrical insulation qualities have never been duplicated, because it is the safest—the only everlasting electrical insulation, impervious to acid, rust and deterioration the foremost electrical engineers still recognize Porcelain as the king of all insulation material. Today the first Porcelain used for insulation is still in service.

PROFIT TO INDUSTRY

Knobs, tubes and other porcelain wiring materials cannot be overlooked. This construction is still the biggest profit material. It increases labor profits—cuts material costs because Porcelain costs far less.

Approved by National Electrical Code

Yet porcelain knob and tube construction meets all of the requirements for the installation of nonmetallic wiring systems where water piping systems are not available for ground electrodes as recommended in article 5 of the 1935 National Electrical Code. The use of Porcelain knob and tube construction and non-conducting boxes and covers in these installations practically eliminates the hazards of accidental shock. This type of construction can be used for every electrical insulation requirement except where building construction necessitates a raceway.

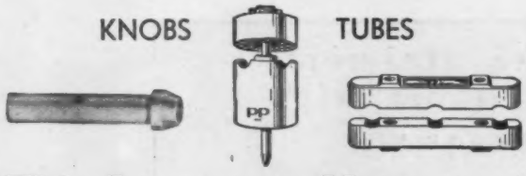
INCREASED OUTLET SALES

Porcelain knobs and tubes enable you to meet the demand for more electrical outlets for with this type of construction you can offer the buyer MORE OUTLETS for an EQUAL AMOUNT OF MONEY. That means MORE BUSINESS, MORE PROFITS and MORE WAGES for the electrical industry. Start putting porcelain to work increasing your business and profits. Start today.

Wherever possible, use

PORCELAIN

KNOBS TUBES



This Important Message to the Electrical Industry is sponsored by

- ILLINOIS ELECTRIC PORCELAIN CO. Macomb, Illinois
- SUPERIOR PORCELAIN COMPANY Parkersburg, W. Va.
- UNIVERSAL CLAY PRODUCTS COMPANY Sandusky, Ohio
- KNOX PORCELAIN CORPORATION Knoxville, Tenn.
- PORCELAIN PRODUCTS, INC. Parkersburg, W. Va.
- CENTRAL PORCELAIN COMPANY Columbiana, Ohio
- CERAMIC SPECIALTIES CO. East Liverpool, Ohio

See our representative at the Annual Section Meetings, International Association of Electrical Inspectors.

Use

For Further Information Write

PORCELAIN MANUFACTURERS

STANDARD ELECTRICAL

Room 736, 201 North Wells St., Chicago, Ill.

BRYANT

SUPERIOR WIRING DEVICES

Presents

- **A new idea**
- **A new way to add convenience outlets decoratively and with color**
- **A new and novel method of installation**
- **A new and approved material to eliminate objectionable cord extensions**

Wires are carried in separate channels in this insulating raceway. (Shown actual size.)

Circuit can be "tapped" at any point to install this neat, compact duplex receptacle.

Flexible raceway is cemented to wall with special AddHere cement. Note corner bend without elbow fitting.

BRYANT ADDHERE

surface extension wiring

Here, at last, is the *practical* answer to a problem that has long beset the electrical industry—the addition of outlets in already-wired buildings at low cost, with an approved wiring material.

To the electrical jobber, it means an opportunity to increase wiring volume and profit.

To the electrical contractor, it means the long-looked-for opportunity to re-enter the wiring business in the only big market of today—millions of already-wired buildings.

To the public utility, it means more *usable* load-building outlets, less trouble-shooting, and more satisfied customers.

To building owners and managers, it means outlets that can be easily and inexpensively changed to suit the demands of tenants.

To people everywhere, it means an end forever to the inconvenience and risk of long, loose cords and "home-made" wiring jobs.

Recognized by Article 516 of the National Electrical Code.
Listed and Labelled by Underwriters Laboratories, Inc.

SAFE · · MODERN · · INCONSPICUOUS · · ·

Bryant ADDHERE is an entirely new and different method of making surface extensions

Starting the "Run"

The circuit is easily picked up from an existing convenience outlet by the use of an AddHere frame, in color to match the raceway. If desired, more than one run can be brought out from the existing outlet.

Installing the Raceway

AddHere Raceway is cemented permanently to surfaces by the use of a specially developed cement. No tacks, no nails, no screws! Installation is made easily, without noise, muss or dirt.

Adding Outlets

Outlets can be easily added at any point in the run, by installing the compact AddHere duplex receptacle. This receptacle is provided in colors to match the raceway.

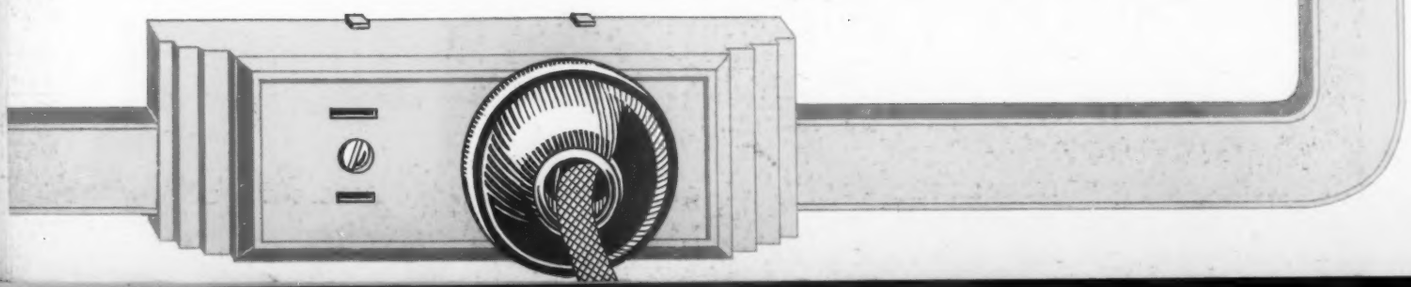
How Run Is Extended

The run of AddHere raceway can be as long or short as desired in the room in which it originates. Neat, inconspicuous and flexible, the raceway can be fitted snugly around door or window frames to make a complete "loop" of the room—always desirable for future convenience. It can be carried inconspicuously in corners up to the picture molding for the installation of the ingenious AddHere Pendant outlet, shown on the opposite page.

Important Sales Policy

AddHere is available only through authorized Bryant distributors, to be sold by them to competent or licensed electrical contractors for installation. This is a strict policy to protect the legitimate electrical trade.

Bryant ADDHERE Raceway and Fittings are in four colors to match popular interior finishes

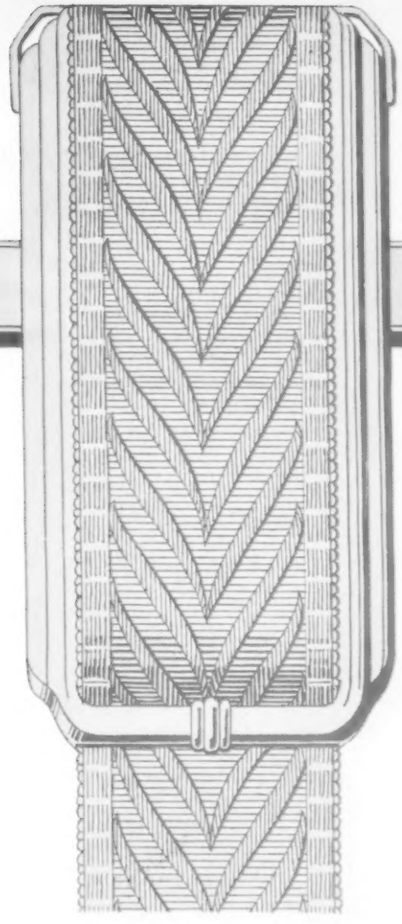


· CONVENIENT

New too

—THE BRYANT ADDHERE PENDANT

Here is the *first* and *only* wiring development by which electrical outlets can be readily installed or re-located on side walls at any desired height or position. The Bryant AddHere Pendant "taps" a run of AddHere Raceway near the ceiling with a special fitting, firmly anchored in place. The insulated wires in the Pendant are safely covered by an attractively designed fabric. At the end of the Pendant (which is seven feet long and adjustable to shorter lengths) is a smartly styled three-way convenience outlet. Note, in the picture below, how the Pendant can be swung away from the wall so the user can *see* the outlet.



Pendants are available in six scientifically selected colors to blend with wall decorations. White, Ivory, Tan, Gold, Peach, Green.

Here, a difficult wiring problem has been solved inexpensively and attractively with Bryant AddHere. Notice the two pendants on the chimney breast providing outlets for the lamps on the mantelpiece, which ordinarily would be wired with long, unsightly cords. Notice, too, how inconspicuous the AddHere raceway is beneath the picture molding and above the baseboard.

An AddHere Pendant between twin beds provides handy outlets for table lamp, bedhead lights, electric clock, warming pad, electric heater, etc. No stooping, no fumbling, when appliances are connected or disconnected.

A convenience undreamed-of before. See how the AddHere Pendant, placed at a buffet, can be conveniently used for electrical appliances. And notice that the user can make the connection without effort.

Sell Bryant AddHere for electrical modernization under F. H. A.

For complete information write

THE BRYANT ELECTRIC COMPANY

ADDHERE BRIDGEPORT BRYANT CONNECTICUT ADDHERE

NEW YORK CHICAGO SAN FRANCISCO

End fitting for terminating AddHere run

DM-101—60M—6-35

RURAL LINE TRANSFORMERS . . . *for*

4-Wire Systems with Solidly Grounded Neutrals

● Allis-Chalmers announces a new line of distribution transformers for rural line extensions.

In designing these transformers careful consideration has been given to the following factors:

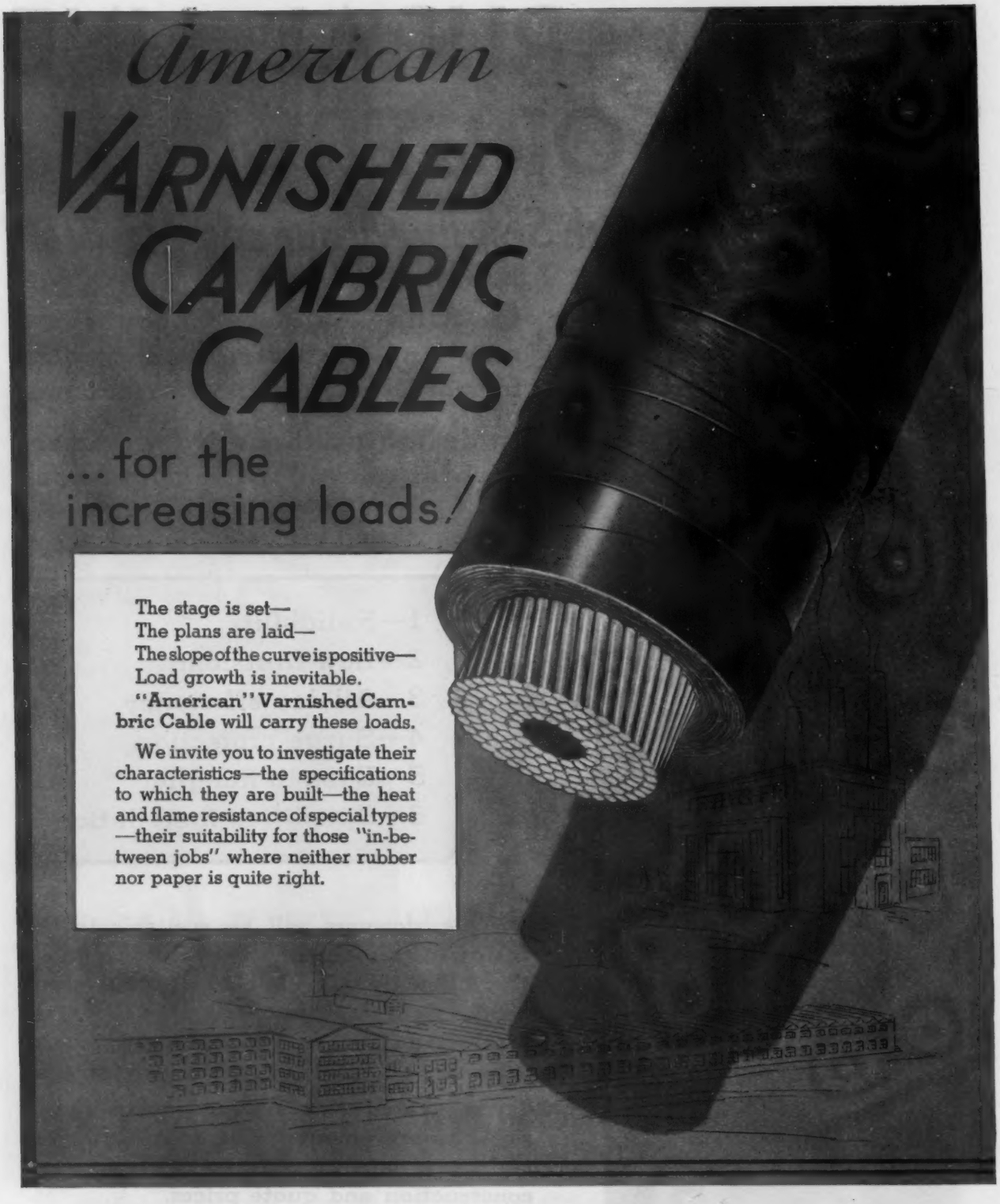
1—Reliability
2—Low first cost
3—All day efficiency
4—Surge protection
5—Ease in hanging
6—Simplified installation

● Transformers will be available in the following ratings: 1 kva and 3 kva in the following voltage classes; 2400 volts, 4800 volts, 7200 volts and 7620 volts. The secondaries are adaptable for 2-wire, 120-volt; or 3-wire, 120/240 volt service.

These transformers incorporate many novel improvements. Our nearest representative will be glad to explain their construction and quote prices.

Allis-Chalmers Manufacturing Co., Milwaukee, Wis.

ALLIS-CHALMERS TRANSFORMERS


American
VARNISHED
CAMBRIC
CABLES
...for the
increasing loads!
The stage is set—
The plans are laid—
The slope of the curve is positive—
Load growth is inevitable.
"American" Varnished Cambric Cable will carry these loads.
We invite you to investigate their characteristics—the specifications to which they are built—the heat and flame resistance of special types—their suitability for those "in-between jobs" where neither rubber nor paper is quite right.

AMERICAN STEEL & WIRE COMPANY

United States Steel Corporation Subsidiary

Pacific Coast Distributors

COLUMBIA STEEL COMPANY

SAN FRANCISCO LOS ANGELES PORTLAND SEATTLE

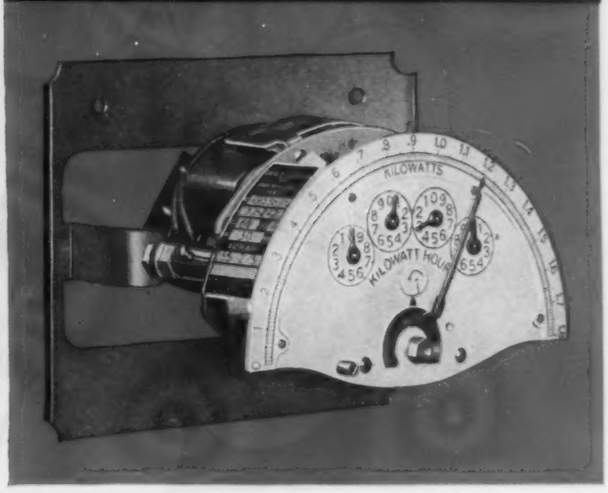
Changing conditions call for MODERN Meters

Loads—both domestic and commercial—are building up steadily. And conditions point to a further increase. Now is the time to determine if you are getting maximum benefit from these added loads. To do this—look to your meters. They must register accurately.

Watthour meters and demand meters of today are definitely superior to earlier types. They are built to meet modern conditions. Investigate them. A systematic program for the retirement of obsolete meters may prove a sound investment.

WATTHOUR METER, G-E TYPE I-20

DEMAND REGISTER, G-E TYPE M-20



THE MODERN G-E watthour meters are known as Types I-20A, I-20B, I-20C, and I-20S. They are all fundamentally the same, differing only in the method of mounting.

In their design, stress was laid on obtaining a high degree of accuracy under all conditions of service. They have practically straight-line accuracy up to 300-percent load—a feature which insures correct registration from light loads to the heavy loads taken by present-day residential consumers.

They have high torque, which gives sustained accuracy for long periods of time. Their performance is but little affected by variations in voltage, frequency, wave form or temperature. The I-20's are *modern* meters.

THE G-E Type M-20 demand register has now rounded out a full year's service. Favorable reports from many users, and the large number of repeat orders, are indicative of the widespread acceptance of this new register. It has proved its accuracy—and above all, its dependability.

Other advantages are now being offered. One is a new packing bracket, illustrated above. This gives added assurance that every register will arrive in good condition. It also makes the register easier to inspect and gives added protection while handling. This new bracket will save you time and expense.

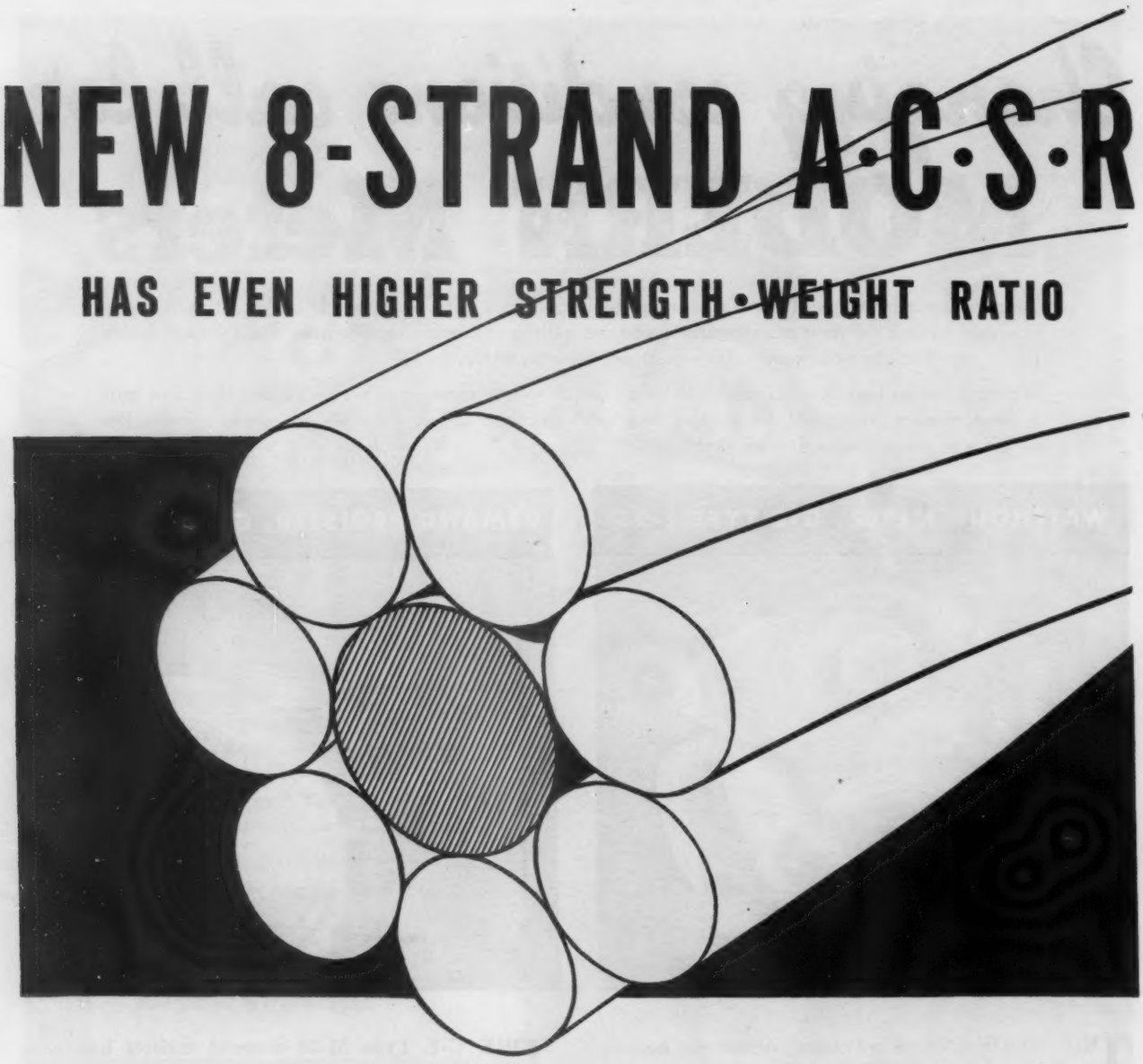
Inquire about these and other improvements in G-E watthour and demand meters. Address the nearest G-E sales office, or General Electric, Schenectady, N. Y.

400-13

GENERAL ELECTRIC

NEW 8-STRAND A·C·S·R

HAS EVEN HIGHER STRENGTH·WEIGHT RATIO



● The best thinking in the industry recognizes the engineering wisdom of building rural lines up to standards that have stood the test of years of experience.

To make that ideal attainable with still greater economy, we have made A. C. S. R. available in a new stranding: 7 Aluminum over 1 Steel. By this increase in the proportion of steel to total cross-section, the strength is increased 25%.

Now, still longer spans can be accomplished without increasing stresses beyond values which sound engineering and experience dictate as reasonable and safe.

The increase in O. D. of this new stranding is so slight that fittings are interchangeable.

More than ever, A. C. S. R. rates first choice for rural lines. Complete data are now available. Write ALUMINUM COMPANY OF AMERICA, 1832 Gulf Building, Pittsburgh, Pa.

ALCOA · ALUMINUM

ANNOUNCING A NEW G-E TIME SWITCH

G-E Type T-17 time switch

Simple • reliable • accurate • more widely useful • low in first cost, installation, and maintenance

TWO YEARS of development have gone into the making of this new G-E time switch. Our engineers, working in conjunction with our General Engineering Laboratory, have produced a simpler and more widely useful switch.

It is timed and powered by the well-known Telechron motor. Drive is direct through a compact spur-gear train, equipped with a ratchet for time setting. This eliminates friction clutches and insures accurate timing. The switching mechanism is unusually simple and operates quick-make and quick-break silver contacts, rated 40 amperes. Other refinements reduce installation and maintenance costs. The G-E T-17 is a switch that will give years of trouble-free performance even under the most severe climatic conditions.

You can get further details about this new time switch from the nearest office of the G-E Supply Corporation, the nearest G-E sales office, or direct from General Electric, Dept. 6A-201, Schenectady, N. Y. Ask for a copy of Bulletin GEA-1427D.

FEATURES

Timed and powered by Telechron motor.

Double-pole switch, 80 amperes; triple-pole, 120 amperes — split load. Saves cost of contactors.

Convenient knockouts; connecting lugs furnished — installation is easy.

Heavy silver contacts — will last for years.

Six forms, for either clock or sun schedule.

Can be mounted in swinging signs—indoors or outdoors.

A similar switch, the T-27, for indoor use only, is available at a lower price.

440-58

GENERAL ELECTRIC

BETTER LIGHT BETTER SIGHT

goes into its fourth amazing year!

From its modest beginnings in the fall of 1932, the Better Light-Better Sight movement has probably grown more rapidly than any similar co-operative program in history. From the beginning the movement enlisted the cooperation of many groups outside of the electrical industry. An outstanding example is the optical industry and profession.

A complete technique for prescribing light along with lenses, described in the new book shown above, has been developed and is being actively promoted through the Better Vision Institute . . . the central organization of the optical industry and profession. At this writing many eyesight specialists are actually prescribing light for their patients!

I. E. S. BETTER SIGHT LAMPS TO BE NATIONALLY ADVERTISED

In June of 1934 the first hand-made models of I. E. S. Better Sight Lamps were exhibited at the Edison Electric Institute convention in Atlantic City. Up to this writing more than a half million I. E. S. Lamps have been sold. A million lamps is a most conservative estimate of sales in the coming season. When you consider that these lamps lacked conventional style appeal this record is astounding. It can only be explained by the fact that the American public is becoming conscious of the need for better light.

Only a few portable lamp manufacturers showed models at that convention in June of last year. Today 40 I. E. S. Better Sight Lamp Makers are uniting in a nation-wide magazine advertising campaign. And the MAZDA lamp manufacturers are also devoting a large amount of space in national magazines to I. E. S. Better Sight Lamps.

GENERAL ELECTRIC SUPPORTS MOVEMENT NATIONALLY

National magazine advertising by General Electric will continue to carry the Better Light-Better Sight story into homes, commerce, and industry. Millions upon millions of advertising messages will cover the country . . . . will broadcast the story of the Science of Seeing throughout the country from coast to coast.

PARENTS, TEACHERS, PUPILS INCLUDED IN GENERAL ELECTRIC CAMPAIGN

In specialized magazines reaching parents and teachers General Electric will carry on a vigorous educational campaign during the coming season. Thousands of charts will be distributed to grade schools for schoolroom use.

A NATIONAL RADIO PROGRAM

This year General Electric is proposing a national Better Light-Better Sight radio program as a cooperative idea among public utilities. This program would unite a large part of the United States in one common Better Light-Better Sight educational effort.

NEW G. E.-LaSALLE HOME LIGHTING COURSES

This year General Electric offers complete courses in home lighting, not only for the home lighting advisor but for the supervisor or executive who directs the operation. These courses are based on months of field experience, are packed with useful knowledge about the Science of Seeing as applied to light in the home, and are expertly written by a group with years of experience in preparing courses for home study.

A WEALTH OF PROMOTIONAL MATERIAL

New General Electric booklets, folders, lighting tape measures, lecture material, movies, slide films, and demonstration material cover every phase of the Better Light-Better Sight story. A complete program for the department store is an important part of this material.

HOW TO PUT THIS PROGRAM TO WORK FOR YOU

The Better Light-Better Sight program, together with the comprehensive plans and materials made available by General Electric, can be highly profitable to every utility and every retailer concerned in the sale of lighting equipment. Your first step toward profitable cooperation is to get in touch with the General Electric lamp division which serves you. Secure the necessary plans and material for your own operation and lay out your own promotional program. The sooner you do this the more profitable for you will be this fourth season of the Better Light-Better Sight movement. General Electric Company, Nela Park, Cleveland, Ohio.

GENERAL ELECTRIC

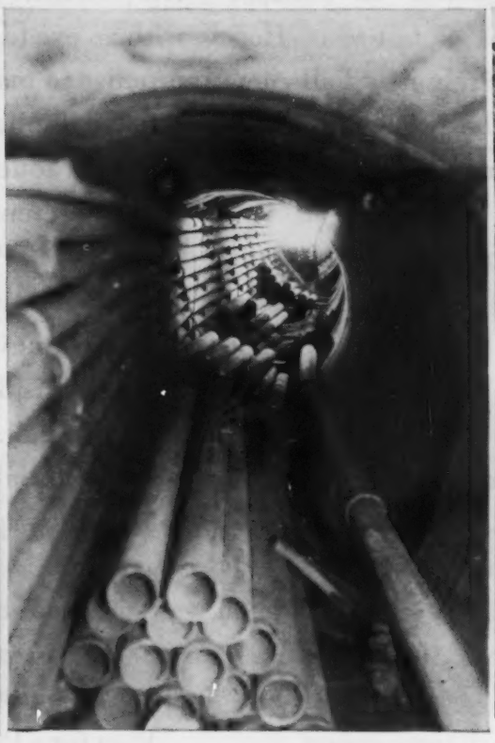
Strong...Permanent...Incombustible

It has great Adaptability!

Johns-Manville
TRANSITE
CONDUIT

JOHNS-MANVILLE JM PRODUCTS

On Bridge Over R. R. Tracks



In Tunnel Under a River

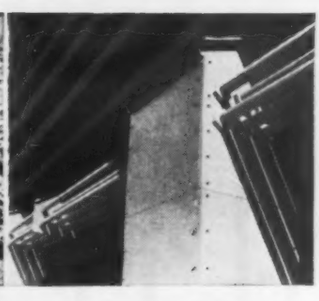
For Street Lighting System*

For Residential Distribution System*

For Fire Alarm System*

For Industrial Distribution

For Underground Transmission*



For Buss Bar Housings

OVERHEAD . . . underground . . . even under a river . . . The camera demonstrates the great adaptability of Transite Conduit.

An adaptability made possible by a group of characteristics unique in electrical conduit.

Transite Conduit is *strong*. Withstands soil stress, earth load, all ordinary street traffic. It is *permanent*. Highly resistant to soil corrosion, immune to electrolysis, absolutely weatherproof. And it is *incombustible*. Unharmed by smoke and corrosive fumes. Burn-outs generate no smoke, fumes or combustible gases.

Furthermore, Transite Conduit has a low coefficient of friction; cables pull without damage . . . it has a high rate of heat dissipation . . . and it is easily and economically installed.

May we furnish full details? Mail the coupon for the Transite Conduit brochure. Johns-Manville, 22 East 40th Street, New York City.

(Transite Conduit available only in the United States and Canada.)

***Note elimination of concrete envelope on these four underground jobs.**

JOHNS-MANVILLE JM PRODUCTS
22 East 40th Street, New York City

Send me a copy of the new Transite Conduit brochure.

Name_____ Title_____

Organization_____

Address_____

City_____ State_____

W-9-35

HOTPOINT RELEASES 4TH CAMPAIGN IN YEAR-ROUND ACTIVITY

WITH electric range and water heater business 100% ahead of last year, Hotpoint releases an entirely new Fall campaign dedicated to the proposition that year-round merchandising effort pays big returns.

"Pure Velvet" is the name which typifies this campaign. Most electric companies and dealers have reached their year's quota by now. The next four months are "Pure Velvet" and the new Hotpoint program, now available, contains everything to help you "ride on velvet" for the next two months.

The "Pure Velvet" campaign is designed to produce plus business during September and October and lead up to a rich Thanksgiving and Christmas season.

Key products of the activity are three new ranges, strikingly styled by Helen Hughes Dulany, foremost woman industrial stylist. They have been designed with an eye to style-conscious people, and promise to make a distinct style trend in kitchen appliances.

Get in touch with your Hotpoint district representative and ask to see the Pure Velvet Plan books. They are complete with potent, new direct mail material, newspaper advertisements, window displays, posters and contest plans for Fall.

All material has been prepared to enable you to capture, in your locality, the active public interest in electric cookery aroused by Hotpoint's year-round national advertising, which reaches more than 10,000,000 families.

Plan for a Pure Velvet campaign. Write immediately for complete information.

EDISON GENERAL ELECTRIC APPLIANCE CO., Inc.
5612 West Taylor Street, Chicago, Illinois

PURE VELVET

ELECTRIC *Hotpoint* RANGES

WATER HEATERS

ELECTRICAL WEST

[*Devoted to the economic production, transmission and distribution of electric power and its application to industry, commerce and the home in the Pacific Empire, and to the sale and distribution of electrical utilization devices, equipment and appliances in that area*]

September 1935

We Seek Further Improvement

LAST fall these pages contained a number of intimate, vital problems concerning the electrical industry in which we are all engaged. They were the problems selected by capable committees as those most pertinent to a healthy and harmonious industry.

Most of the problems were not solved, although they were materially clarified by the contests conducted under the auspices of the Pacific Coast Electrical Assn. early this year. The interesting thing about these problems is that they will never be completely solved. Yet improvements in each of them can be made chiefly by thinking about them and seeking out ways and means to improve our technique and our mental attitudes.

For that reason I imagine that when our committee chairmen get together this month for a decision as to just what our program is to be during 1935 and '36, many members will recognize some of the previous problems stated in a different way. Certainly there is still a great deal we can do to improve our public and trade relations. Selling is still one of our most important needs. And from an engineering standpoint we can all profit by simplified and improved methods of construction, operation, and maintenance.

Our hope is, this year, to so word and so present these problems of the industry that we shall get a far greater response from members among other branches of the industry than the utilities. Naturally we want all of our utility members to study these problems and to participate in the contests for solutions to them too. But we need the perspective, the outside view of ourselves which the contractors, dealers, wholesalers and manufacturers can best bring us.

By F. O. DOLSON
Vice-President and General Manager, Southern Sierras Power Co., Riverside, Calif.
President, Pacific Coast Electrical Assn.

I am afraid that many of those in other branches of the industry than utilities did not appreciate that we were really sincere in wanting to know how we could improve this industry. They were perhaps hesitant to speak out frankly and therefore kept silent. We know that some of the suggestions other branches in the industry may make to the utilities or to the industry at large may hurt a bit, for they undoubtedly will uncover weaknesses, and it is never pleasant to face one's weaknesses. Yet, even if we do fume a bit when we first hear them, I believe the industry is broad enough in its personnel and sincere enough in its desire to win back popular public approval that it will truly welcome such an expression, whether critical or not, so long as it is constructive.

My own feeling is that we shall be much better off if we can speak frankly within our own councils and meetings. Thereby we can clear up our family misunderstandings at home, rather than nurse them silently and vent them upon outsiders, who can gain no other impression but that the propaganda against and vilification of our industry must be true, since it is supported by members of the industry itself.

The Pacific Coast Electrical Assn., as it was recently reorganized, was designed to become such a forum for the problems of the industry. During the last administration under Mr. Markwart it went a long way in that direction. There has seldom been such a response to a call for advice and suggestions for the improvement of our business as that we had last year. The best part of it is that nearly all utilities reviewed the suggestions offered in the contest with a real desire to adopt many of them into their own operations. Some culled the good ideas from all the papers and have used these as a basis of discussion in management meetings. Others held local group meetings of the industry and discussed the problems treated in the papers. It will be seen, therefore, that our endeavors of last year have really been useful and beneficial. We should carry on from that point this year into greater usefulness.

All of us will be busier this year than we have been for some time, for all companies are experiencing increased loads and definite increases in volume. In spite of this I urge all members to realize that one of the foremost responsibilities we owe our business is involved in the solution of the problems which shall be set forth for this year's activities of the Pacific Coast Electrical Assn. It is obvious, therefore, that active, sincere participation in these activities shall be to the personal and business interest of every person in the industry.

What This Survey Means to You

NO MATTER in what branch or vocation of this all embracing electrical industry you find yourself in the following review there is both a personal and a business interest. The Better Light-Better Sight movement undoubtedly is one of the most important and far reaching in the history of the industry, since it affects that most important of human senses—sight. Your personal interest centers about your own eyesight, *your* most precious possession. Everything that the industry does to improve lighting standards for you, your family, your friends, your customers, your country is a definite value to you. So, if you do nothing else, talk enthusiastically of better light for better seeing. It will pay you personal dividends.

Then, if yours is one of the following you can find in this movement a still further business benefit. Read the following reports from the lighting and business building executives of the utilities with these interests of yours in mind and you will be guided to earning your share of the business which this movement will bring to those whose eyes are open and who see the light—

- ***Dealers*—will find in this an outline of the promotional and cooperative programs which these utilities plan to conduct and can gear their own program to it with stock, display, advertising and selling.**
- ***Wholesalers*—will find an index of their market for lighting equipment sales, both so that they may stock up their dealers but also stimulate their contractor customers to follow up and develop increased wiring and installation business.**
- ***Contractors*—will find the market for wiring being created for them without much effort on their part, and if they "see the light" of selling, can develop far more wiring business from this stimulation of lighting. The bottleneck-wiring—is sadly in need of being opened wider. Only wiring sales will do it.**
- ***Manufacturers* — will find in these reports an index of their market, and of its potential growth. They can plan to direct the sale of their lines in areas where this promotional effort is being made, not with the utility alone but with their dealers.**
- ***Utilities*—will find in this survey a stimulation to their own efforts during this forthcoming big season of Better Light-Better Sight. They can find in here hints to improve their own methods, ideas that are in use elsewhere worth trying perhaps. Lighting men will find here a directory of other lighting men from whom they may obtain further detail if they wish it.**

Light Marches On!

Central Arizona Light and Power Co., Phoenix, Ariz.

By A. F. MORAIRTY
Assistant General Manager

AT this late hour I can only give a brief outline of our more or less limited activities in the Better Light-Better Sight program of last year.

Because it was a new endeavor to us and we were not positive of the results we would obtain, we employed but three residential solicitors, called advisers, in the Better Light-Better Sight program. Phoenix does not lend itself to lighting activities during the summer months, so these girls worked from November to April, inclusive. Their work consisted of calls by appointments which they secured through our salesmen or over the phone or through dealer contacts, and they also assisted the dealers with any prospects they secured.

During this period they made a total of 1,200 calls. Their report showed that they added 151 kw. in load. The dealer reports were not complete.

Many utilities in the West use this idea for demonstrating by actual test the effect of floodlighting. This one of Pacific Power & Light Co. is equipped with steel tubes of various sizes which telescope into each other. Use of this device has been found to sell approximately 750 watts extra illumination per demonstration.

The company made no sales of I. E. S. lamps or fixtures through the company, but directed all such sales to dealers. The volume of lamp bulbs sold by dealers and the company was approximately $18,000. The total volume of I. E. S. lamps and lamp bulbs was estimated at approximately $30,000. The average wattage of lamp bulbs sold was 80, or an increase of 10 watts over that of the previous year.

In addition to the above activities, the advisers were placed in local stores to advise customers concerning modern types of fixtures. All lamp and fixture dealers and optometrists were fully informed and cooperated toward the success of the program. Home lighting talks and skits were given in schools and Parent-Teacher associations; radio programs were broadcast.

This year's endeavor might be considered more or less of a test of this type of load building and was successful to an extent that we will increase our activities during the coming year, as well as add two commercial men.

The most interesting result of the campaign was the check on customers reported to have added load to ascertain the results on the revenue received by our company. There were 115 such customers selected; 100 increased the average monthly bill $1.11 and 15 decreased the monthly bill 97 cents. No definite information was obtained as to why the 15 customers' bills decreased except, generally speaking, that Phoenix has more or less of a transient population. It is possible that the customers with the decreased monthly bills were away from the city for part of the period checked.

The program this year will be extended to the sales force and also to all employees.

•

Idaho Power Company, Boise, Idaho

By L. W. BRAINARD
Sales Manager

THE opening date of last year's Better Light - Better Sight activity was delayed until Nov. 1 pending the completion of a dealer cooperative organization. While this delay, no doubt, resulted in final accomplishments being somewhat less than had the full Better Light - Better Sight period been available for sales accomplishments, it is felt that the educational work done with dealers, as well as the utility organization, will be reflected in later accomplishment. The table below gives a resume of sales:

Outdoor—A number of individual lighting jobs were accomplished, principal of which were softball courts, band shells and special lighting.

One of the outstanding accomplishments in connection with the general Better Light - Better Sight activity was the completion of the organization of 16 home lighting girls, who have been in continuous operation since January, 1935, and will continue on through the 1935-36 Better Light - Better Sight season.

Advertising will be largely promotional over the name of the E. E. S. A. and similar to that done last year.

The selling method will remain the same, namely both company and dealers will sell. The principal merchandise feature will be I. E. S. lamps.

Quotas, including both company and dealers, have been set up as follows:

Average wattage quota—70 watts per bulb.	
Lamp bulbs:	
36-60-day empty socket campaign (bulbs)	70,000
7 months' activity quota (cartons)	50,000
I.E.S. study and reading lamp (150-watt bulb)	1,750
Reflector type high wattage floor lamp (250-500-watt bulb)	2,450
Pin-it-up, Renu-a-lite, etc. (75-100 watt bulb)	3,500
Kitchen units (100-150-watt bulb)	1,750

Commercial—Personnel will consist of four full-time commercial and industrial lighting men. Advertising and promotion will be principally educational and promotional work, involving both company and dealers, all sales of fixtures and equipment being through dealers. Use of demonstration kits and other equipment will be made.

Quota for the commercial lighting campaign is 540 kw., which includes industrial lighting, electric signs and billboards, floodlighting and exterior lighting, retail stores—windows, show cases, theatres, hotels, banks, and other commercial establishments. Particular attention will be given to proper school lighting. Particular attention will be given to floodlighting installations, softball courts, rodeo lighting, etc.

DOMESTIC

Items or Units Sold	Lamp globes cartons	Student lamps	Reflector type floor lamps	Pin-it-up and similar lamps	Other portable lamps
Company	13,205	273	334	1,734	....
Dealer	19,410	200	244	394	2,534
Total	32,615	473	578	2,128	2,534
Sales Volume					
Company	$18,251	$1,869	$4,558	$3,106	....
Dealer	26,785	1,360	3,260	690	$8,136
Total	45,036	$3,299	$7,818	$3,796	$8,136
Kw. load added					
Company	†	28	77	69	...
Dealer	†	20	55	15	151
Total	†	48	132	84	151

(Note: † replacement load.)
Kw. load secured through home lighting demonstrations—226 Kw.

COMMERCIAL

Number of jobs sold	1,000
Sales volume	$21,705
Kw. load added	203

the Electrical Equipment Sales Assn. and the cooperative advertising done.

1935-1936 Activity Plans

Domestic—Personnel will consist of

Coast Counties Gas & Electric Co. just plugs away hard and thoroughly at lighting sales. It brings results both to contractors and to its own load. An example of the numerous sports lighting jobs recently sold was the ball park lighting at Morgan Hill, Calif. The lighting was sponsored by the Morgan Hill Exchange Club, and the field managed by an athletic commission. Receipts from three months' night play has written off the entire cost of the project

Los Angeles Gas and Electric Corp., Los Angeles, Calif.

By R. A. CROSBY
Illuminating Engineer

ALL lighting layouts having to do with commercial, industrial, or residential occupancies, either new or remodeled structures, clear through a group of three illuminating engineers. In addition to this, a crew of from 9 to 12 commission salesmen, working under one supervisor, is employed in the promotion of domestic lighting.

Last Year's Acitivity—One complete circuit of the domestic customers on our lines resulted in the sale of approximately 20,000 kitchen lighting units; 90 per cent of which were equipped with 150-watt lamps.

Commercial and industrial lighting efforts were concentrated on the smaller establishments. Leads were developed by a crew of new business solicitors and were followed through by the three illuminating engineers previously mentioned.

Contemplated Activity for this Year—The same program of commission sales for the promotion of domestic lighting will be continued. Decorated kitchen units have been added to the previously campaigned undecorated units, and a conversion head for adapting existing floor lamps to a modified I.E.S. type floor lamp has been added to the line.

The same personnel will continue the same commercial, industrial and outdoor lighting activities for the ensuing year as has been pursued during the past year. These men do no selling, nor do they recommend any one manufacturer's equipment, assisting the dealer and contractor of the customers' choice to make the sale.

Bureau of Power & Light, Los Angeles, Calif.

By T. H. SHEPHERD
Illuminating Engineer

THE promotional lighting section of the Bureau of Power and Light, City of Los Angeles, consists of four well trained illuminating engineers and one lighting supervisor.

It has always been our experience that selling illumination purely from the service angle, gains far better results in kilowatt sales than if we were to consider additional kilowatts as our only objective.

In close cooperation with the illuminating engineers are the general field salesmen, who are in field continually making service calls, arranging for meter changes, explaining rates, etc., which give them an excellent opportunity to broach the subject of adequate illumination with the consumer or prospect. With this idea in mind we have spent considerable effort in training our sales force in the virtues of adequate illumination.

With this knowledge the salesman, when discussing advantages of illumination, can make simple recommendations to the consumer at the time and thus leave the more involved problems for the illuminating engineers.

In making recommendations we go to considerable pains in preparing a complete report for the consumer, although at times it has appeared that the expense involved was not merited. It has been our experience that it is better to make a complete report for a few good prospects than to make a half-hearted recommendation for a large number; and it is much easier to keep accurate records of the results obtained.

The general salesmen work entirely according to territory. The illuminating engineers work according to territory to a great extent. However, during the past year, we have assigned each illuminating engineer a special illumination application on which he can keep particularly well informed. For example, one engineer specializes on sports lighting. If one of the other engineers runs into a sports lighting design in his territory, he will discuss the latest developments with the "sports lighting engineer."

We have found that working to a quota is not to be desired, because the salesman or engineer's attention is divided between making his quota and doing a thorough job.

We have had no trouble obtaining fine dealer cooperation. We find the progressive dealers are always anxious to work with us on our recommendations. Since our policy is strictly non-merchandising, we have gained the confidence of manufacturer's representatives, fixture dealers, etc. We will admit that dealing with a group of dealers who have competitive merchandise to offer is a situation that requires considerable tact; however, it can be done!

Our recommendations include lighting application only, such as placement of outlets, type of equipment, and lamp size necessary for the visual task at hand. Since we do not include wiring layouts, we have enjoyed very satisfactory cooperation from consulting engineers and architects.

During the last year modern lighting design has taken the trend of luminous elements, not only for interior application, but for advertising store fronts. We have cooperated very closely with manufacturers who specialize in these designs looking forward to greater activity where light is combined with architecture.

We have used advertising to great advantage in our lighting promotion work. It consists briefly of full page ads in "Southern California Business," the house organ of the Chamber of Commerce, and a simple, direct, sincere letter, directed to all new consumers (commercial) and all consumers who change their address. These direct mail letters are written especially for the type of business in which the consumer may be involved, and contain a miniature photo pasted on the margin, showing an installation of lighting design from a similar enterprise. Also we have special campaigns on various activities in which we send out four page illustrated folder letters and solicit the cooperation of our general salesmen in the field for a follow-up. The illustrations used in our advertising are all of local installations.

We do not participate to a large degree in a residence lighting program, as our policy is strictly non-merchandising. It is our belief that when merchandising is stricken out of home lighting, results to be expected do not justify its existence. We do, however, make many layouts for "all electric homes," at the consumers' request.

By personal attention and selling to every new home being built most of them are responding to the admonitions for better light. These complete electric beach homes, in the modern manner, are equipped with I.E.S. lamps as well as electrical kitchens. They are located at the Rio del Mar golf and country club beach at Aptos on the Coast Counties Gas & Electric Co. system

•

Northwestern Electric Co., Portland, Ore.

By J. C. PLANKINTON
Sales Manager

OUR interpretation of the term "last year's lighting activity" is for the period July 1934 to June 1935 inclusive. This year's activity is for the calendar year 1935. A quick outline of last year's lighting activity follows:

Domestic—Our sales activity is almost entirely promotional. In some of our smaller district stores we sell directly, but this is a small percentage of the total business done. Number of units sold by both dealers and company—

Table and floor I.E.S. lamps..1780
Load installed by home lighting girls ..... 692.1 kw.

Commercial and industrial—Our activity, both commercial and industrial, is entirely of a promotional nature. Prospects for lighting are developed and then turned over to dealers and electrical contractors who sell and install the fixtures and wiring.

Outdoor—In this field our principal activity has been with service stations. We have gained a very substantial load increase from this group, and we are now hopeful of further large increases from the larger oil company stations.

Playground—The ball field at Peninsula Park was recently lighted for evening play. It is being watched with keen interest, as it is the first job of its kind in Portland; 40 kw. of lighting were installed.

Garden—Interest in garden lighting is growing rapidly. We purchased a number of pieces of equipment for demonstration purposes and temporarily installed them in customers' gardens. They were so well liked that we recently provided additional units in order that we might carry on a number of demonstrations simultaneously. Local stores plan to handle the equipment.

Our plans, program, methods, and objectives for this year's activity are:

DOMESTIC

Personnel—We employed two girls until September of 1934, when we added eight. These saleswomen spent full time on home lighting, doing promotional work only.

Advertising and promotion—This summer a number of the lighting girls served as lighting advisors during sales and on Saturdays in the lamp departments of our leading stores. Lamp department managers were very enthusiastic about the arrangement and our girls were given an opportunity, during lull periods, to tell to the saleswomen the story of Better Light-Better Sight.

Our lighting girls have been answering special appointments and canvassing our residential customers in their respective districts. If the customer permits, a lighting demonstration is made and a written proposal given, recommending the proper size bulbs and proper number of lamps. Each girl has a monthly quota in kilowatts.

Advertising was carried on through the radio and newspapers. All our newspaper space emphasized the idea of buying I.E.S. lamps from dealers.

Quotas—We have set quotas of 2,200 I.E.S. table and floor lamps, and 2,400 Pin-it-ups, Renualites, etc., for the year 1935. The home lighting quota is 1105 kw.

COMMERCIAL

Personnel—Our personnel in this group consists of five full time and six part time salesmen.

Advertising and promotion—Advertising is chiefly direct-by-mail with some newspaper space used. The specialized class of customers in this group makes direct-by-mail advertising preferable. As described above, our selling in this field is entirely promotional.

No particular brand of merchandise is featured. Our salesmen work with all the manufacturers' representatives on their jobs.

Quotas—Each salesman has a monthly quota; the total for all salesmen in commercial lighting for 1935 is 1,552 kw.

Scope—Our plans are that each commercial customer shall be contacted within the year. In our contact with the customer we attempt to give him the Better Light-Better Sight story from his point of view, showing him that better lighting will increase the profits from his business.

Commercial outdoor lighting is handled by our regular lighting salesmen.

SUMMARY OF CALLS AND LOAD ADDED—COMMERCIAL LIGHTING
Northwestern Electric Company, Portland, Ore.
All Commercial Lighting Salesmen—Portland and District

Month	Number		k.w.	Average per man		k.w.	Number
1934	Calls	Closed	Added	Calls	Closed	Added	Salesmen
June	986	54	58.8	197	11	11.76	5
July	799	53	57.6	177	12	12.8	4½
August	910	53	59.1	202	12	13.13	4½
September	615	41	50.	164.	11	13.33	3¾
October	938	73	93.5	188	15	18.7	5
November	830	57	65.9	175	12	13.9	4¾
December	843	58	65.8	169	12	13.2	5
1935							
January	819	47	48.1	164	9.4	9.6	5
February	698	55	86.8	140	11.	17.4	5
March	685	61	77.5	137	12.5	15.5	5
April	881	58	86.4	176	11.6	17.3	5
May	915	53	90.9	183	10.6	18.2	5

Pacific Gas and Electric Co., San Francisco, Calif.

By O. R. DOERR
Manager Lighting Sales

ACTIVITIES of the Pacific Gas and Electric Co. in the promotion of lighting load commenced well over ten years ago and has been followed as a continuous effort since that time. The subdivisions of effort in this field are: (1) domestic lighting, (2) commercial and industrial lighting, (3) street lighting.

Many facts are outstanding in connection with these efforts which, as a background, are worthy of mention. In the first place, in the domestic classification the effort which was commenced in 1925 has been a continuous all year-round activity since that time. An average of 50 men have been employed per year in disseminating educational information to home owners.

The overall results of this continued effort have been the development of a level of illumination for the homes in this territory which is not surpassed anywhere in the country. This objective demands periodically adopting in progression, succeedingly higher standards. It is estimated that approximately 200,000 kitchen lighting units are now in use in Pacific Gas and Electric Company's territory. This is a saturation of approximately 40 per cent of all domestic customers, including apartment houses and flats.

In the commercial and industrial field, over the same 10-year term, approximately 15 men have been constantly employed to assist dealers, architects, customers, and others. No equipment is sold in this classification; this is purely a promotional effort in cooperation with contractors and manufacturers.

In addition to this improved type of kitchen lighting, there are in PG&E consumers' homes, approximately 75,000 high quality single lamp floor, table and suspension units equipped with 200 to 500 watt lamps. This is a saturation of approximately 15 per cent and has done much to create interest in and increase the dealer demand for light producing equipment.

1934 LIGHTING ACTIVITIES

Domestic—An average of 59 lighting equipment specialists have been engaged exclusively in the sale of lighting equipment and explaining better lighting standards to home owners in Northern California. The theme of the 1934 lighting promotional effort was "Tested Light for Better Sight." Their efforts were backed up during the year by a substantial newspaper advertising campaign, bill stickers, window displays and well selected exhibits at fairs, food shows, etc. Every man in this activity was equipped with a sight meter, and other facilities.

It is estimated that more than 200,000 domestic customers were contacted with the better-lighting story in 1934, and, because this was a cooperative effort, some 40,000 new fixtures were sold. In addition to this, many more prospects were developed, which it is expected dealers will ultimately sell. Of the estimated total of 40,000 fixtures, company direct sales were approximately 50 per cent, consisting in round figures, of the following units:

Floor and table lamps	6,000
I.E.S. study lamps	2,000
Renualites and Duplexalites	10,000
Miscellaneous types	2,000
	20,000

All of the lighting equipment selected for direct sale was of the one-lamp design and the following types are especially featured:

1. Three-light semi-indirect floor and table lamps.
2. I.E.S. study lamps.
3. Kitchen lighting units.
4. Suspension units for living-room, dining-room and bedroom.

It must be recognized that many times this number of fixtures, including many of approved design, have been sold by dealers during the same term throughout PG&E territory.

Commercial and Industrial Lighting: This classification covers all phases of commercial and industrial lighting for interior and exterior use, as well as flood and sports lighting. An average of 18 experienced and well trained lighting specialists were employed the year 1934 a larger number of tennis courts, soft ball diamonds and other recreation areas were lighted than in any previous year.

Considerable time has been devoted to the study of new developments such as sodium vapor, high intensity mercury lamps, lumaline lamps, etc. A

number of test installations have been made. Sodium vapor, because of its color characteristics, is recommended only outside of cities and towns for lighting railroad crossings, underpasses, road intersections and all classes of busy highways. Sodium lighting has been selected for the San Francisco-Oakland Bay Bridge. About 1000 units will be used on this project. It now seems likely that sodium lighting will be selected for the Golden Gate Bridge and a large tunnel project soon to be lighted.

1935 Lighting Activities

Domestic—The remarkable success of the Better Light - Better Sight campaign which is being conducted nationally, together with the tendency to return to usage many of the domestic facilities which have been left somewhat dormant during the past few years, has caused the company to embark on a more ambitious plan of customer education in 1935 than heretofore. It is the objective to contact approximately 250,000 domestic consumers in the year 1935. Thirty domestic lighting equipment specialists in addition to approximately 7 combination district domestic salesmen, are assigned to this work.

In addition to this direct contact work, a program is now under way consisting of newspaper advertisements in most of the cities and towns in northern California, broadsides, bill stickers, bill boards, truck cards, all supported by window displays in approximately 65 offices of the company. The theme of all of this advertising is, "Protect your eyes with a sight-saving light." All printed matter bears a notation, "See the Pacific Gas and Electric Company or your Dealer."

For the year 1935 it is believed combined efforts of company and dealer in promoting the sale of these better quality lighting fixtures will exceed 60,000 units. It is estimated the company will sell about one-third of this total of 60,000 new units.

The introduction of new and more precise light testing equipment for use in eye specialist refracting rooms and the very close relationship of "light to sight," is doing much to make the public distinctly light conscious. Along with this development has been the tendency on the part of educators and other officials of institutions in the state to give more thought and study to the lighting facilities in schools, colleges and other institutions of learning. The result of all these influences has developed a determination to form a non-commercial educational organization somewhat along the lines of the Sight Saving Council at Cleveland and other eastern communities.

Commercial Lighting — Commercial lighting in 1935 is being carried on substantially the same as in 1934, with the possible addition of a more systematic coverage of the commercial and industrial establishments served by the company. All salesmen engaged in this work are required to make a specified minimum number of calls per week, at which time these salesmen examine the lighting conditions found in the various stores and factories, and where possible, make a lighting layout and submit suggestions.

Sports lighting, notably the night lighting of soft ball diamonds and tennis courts, is going ahead with greater rapidity than in any previous year. Outdoor service establishments, such as oil stations, parking grounds, etc., are dressing up and lighting up. There is a renewed interest in modernizing store fronts. The tendency is distinctly toward the luminous front idea.

The growth in street lighting revenue is expected to be double the increase shown in 1934. Indications are that 1935 commercial, industrial and street lighting revenues will far exceed those of the past six or seven years.

●

Pacific Power & Light Co., Portland, Ore.

By GUY E. DAVIS
Merchandise Manager

As a result of our program in lighting the results for the 12 months' period ending June 30, 1935, in domestic units, sold in direct merchandising (7 months—Sept.,-March), totaled: Student lamps, 1,481; High wattage, Portable lamps (250-watt and over), 1,614; Renu-a-lites and Pin-it-up lamps, 2,728, and lamp bulbs, 18,116 cartons. These include both company and dealer sales in each instance.

Direct sale of residential lighting equipment by the Pacific Power & Light Co. was carried on by three separate activities during the seven months' period:

First was a Better Light - Better Sight activity featuring the study and reading lamps, Sept. 17 to Nov. 10, 1934. This activity closed with 195.4 per cent of the assigned quota attained.

Next was the Christmas special Better Light - Better Sight activity, Nov. 12 to Dec. 24, 1934. This activity was arranged on a competitive basis between operating and sales employees. At the completion of the Christmas special campaign 313.8 per cent of quota was attained.

Then followed the Better Light - Better Sight activity of January and February 1935. This activity was conducted on a basis similar to the Christmas special campaign. Load building bonuses were paid to operating and sales employees for the direct sale of such equipment as featured. This activity closed with 38 per cent of the assigned quota attained.

In addition there was a home demonstration program carried on by three full-time lighting girls and six part-time representatives, which resulted in 1,580 installations being made, adding 317,312 kw.-hr. in residential lighting and $10,229.13 in estimated annual revenue.

Commercial

For the twelve month's period ending June 30, 1935, the following results were achieved:

Installations	643
Kw. increase	471.275
E.A.R. increase	$29,093.28

The commercial lighting activity has been carried on strictly as a promotional program through personal calls, demonstrations with the commercial lighting kit and trial installations.

Outdoor lighting in the field of sports has been promoted through personal calls and direct-mail promotional pieces with results as follows:

Football	4 installations
Regulation baseball	1 installation
Soft ball	4 installations
Tennis courts	2 installations
Swimming pools	2 installations
Badminton court	1 installation

The above installations resulted in approximately 350 kw. being added to the commercial lighting load.

Of this group, the Yakima, Wash., high school athletic field illuminated for baseball and football proved an outstanding job. This installation consists of 76 floodlights on twelve 80-ft. poles using 32 1500-watt lamps and 44 2000-watt lamps, all being operated 10 per cent over voltage. From the standpoint of the players and spectators, this installation, while a minimum for satisfactory regulation baseball, has proved quite successful. The infield has an average illumination of approximately 35 ft. candles with a minimum of glare. This lighting installation has made it possible in a community, such as Yakima, to play successful baseball games during the mid-week. Previously, games during the mid-week were poorly attended, with little interest from both the spectators and players.

Our plans and programs for the coming season, in domestic lighting will have:

Personnel—Entire sales department will devote part of their efforts to sale of lighting equipment. Seven full-time and three part-time home lighting girls will be employed during the fall and winter. Four hundred and fifty operating employees will be enlisted to assist in the sale of lighting equipment.

Advertising and Promotion—News-

paper and direct-mail advertising will be used. Window and floor displays will be installed throughout the various offices. Discussions will be given before various clubs, groups, etc., by the lighting representatives.

Selling Methods—All activities will be on a co-operative basis, such that the dealers of lighting equipment will have their sales stimulated through the advertising and promotional efforts of the company. Sales by the home lighting representatives will be for the most part through the dealers.

Equipment to be Featured—I. E. S. study and reading lamps, reflector type lamps, Renu-a-lites and Pin-it-up lamps, and Mazda lamps.

Quotas—(tentative) for both company and dealer sales have been set as follows:

Study and reading lamps	2,200
Reflector type indirect and semi-direct lamps	3,080
Renu-a-lites, and Pin-it-up lamps	4,400
Mazda lamps (cartons)	66,000
Home lighting demonstration activity (kw.)	1,050

COMMERCIAL AND OUTDOOR

Personnel will consist of five full-time and one part-time commercial lighting representatives.

Advertising and Promotion—Direct-mail promotional pieces to be sent to prospects for specific types of lighting such as: window, offices, floodlighting, etc. Discussions to be given by lighting representatives to various clubs, groups, schools, etc.

Selling Methods—All sales are made through electrical dealers. Lighting representatives promote increased business only. Dealers are advised at all times of programs under way and of direct-mail material, so that they may tie in with such programs.

Equipment Featured—Since sales are made through dealers, specific makes of equipment are not featured. Classes of lighting equipment of satisfactory quality are suggested.

Quotas (tentative)—700 kw. of increased commercial load has tentatively been assigned for the coming season. (Lighting installations promoted by representatives only recorded.)

Scope—All fields of commercial lighting are being developed, more especially service station floodlighting and indirect office lighting. Industrial lighting will be stressed to some extent, but due to the small number of industrial customers will not be a major activity. Outdoor sports, garden, Christmas and civic lighting will be stressed, with special emphasis on Christmas lighting this fall. Highway and street lighting will be promoted to some extent this fall and winter; however, will not have a major place in the program.

Public Service Co. of Colo., Denver, Colo.

By R. T. RANKIN
Superintendent, Lighting Division

YOU are acquainted with the fact that last year we opened our Electric Institute. The attention, of course, centers around lighting in this Institute. Our method of operation is strictly promotional and is designed chiefly for the domestic customer. Groups are fascinated with the appointments and the use of this Institute has proved so popular that bookings are practically filled for September, October, and part of November. Over 25,000 people have gone through our Institute and had the Science of Seeing story told to them.

With the aid of this story we accomplished some outstanding results in lighting in Denver. Our selling activity really got under way in September of 1934. It includes an intensive office lighting, filling station lighting, and domestic lighting campaign.

Domestic — Fixtures sold, 1,012. Mainly replacement fixtures consisting of indirect or shaded types. Direct selling by men was the system used. Sight-meters were used, but no kits.

Commercial and Industrial—Fixtures sold, 744.

Our office lighting campaign was successful because of our new and unique survey presentation consisting of an engineering report dressed up by means of the Science of Seeing story.

Outdoor—Our activity in this line was mainly promotional. We furnished specifications for 55 completed soft ball installations in this territory, which loads varied from 12 kw. to 40 kw. A few tennis court lay-outs were made. Requests for specifications were received from Germany and Switzerland for tennis court specifications.

Garden lighting occupied the summer season in 1934. A newspaper contest with prizes was run, in conjunction with the Rocky Mountain Electrical Assn., with gratifying results. The largest resulting installation was put in during late fall at a large residence with a resultant load of 18 kw.

A summary of our activities showed the following facts: Office lighting surveys resulted in 100 per cent load increases for those rooms surveyed and sold. Survey acceptance and merchandise sold in approximately 75 per cent of cases where survey was allowed by customer. Through promotional and direct sales, the following results in kw. loads were credited to us for this territory:

Domestic	1083 k.w.
Commercial and industrial	500 k.w.
Floodlighting	343 k.w.
Soft ball and other sports	800 k.w.
Christmas lighting	283 k.w.
Garden and yard lighting	300 k.w.

The year 1935 has more in store for us than 1934, we believe. Our plan is to canvass intensely our domestic customers and to work mainly on offices in the commercial department. Other companies (not utilities) are pushing store lighting. A combination job with them is being arranged for fall. Commercially our methods will still be conducted through the written survey.

In the domestic division we have for Denver, three salesmen, one girl (advisor), two special sales crews of about forty men during special campaigns on lamps and lamp bulbs. Our advertising and promotion will come largely through the Electric Institute and through the optometrists who are now cooperating by prescribing light along with glasses. Our selling method is direct. We feature I.E.S. lamps. A Mazda lamp bulb campaign and a floor and table lamp activity will be specials for the fall.

In the commercial department, Denver has three salesmen and one manager. Selling is direct with no featured merchandise. Office lighting is the field being developed, with indirect lighting usually specified.

In our outdoor activity one man on a promotional basis covers Denver, helping all members of the industry. No particular equipment is featured. The scope of this activity is for all types of outdoor lighting. A yard and garden lighting contest and a Christmas lighting contest will be held again this year. Park lighting is being worked on intensely at the present and street lighting will be carefully worked this fall. The groundwork is now being laid for some test sections of highway lighting. Our anticipated results will be 25 per cent greater than 1934.

•

Puget Sound Power & Light Co., Seattle, Wash.

By C. T. BAKEMAN
Lighting Sales Director

OUR commercial lighting department, which was started last August, now consists of nine commercial lighting salesmen, each operating under a general sales program and reporting directly to our district sales headquarters. This organization covers all types of commercial, industrial, school, municipal and office lighting. They do not sell lighting equipment but arrange for installation and sale of equipment through local dealers and contractors.

During the first 6 months of this year the department produced $58,828 of estimated annual revenue added to our lines. This represents an average of approximately $1,100 of estimated annual revenue per salesman per month. This revenue was produced with a di-

rect added cost of $10,871, approximately $5.40 of annual revenue per dollar of expense.

Home Lighting

The home lighting activity of the company was started Feb. 1, at which time 12 young women were put through a two-months' training period. As of April 1st the department was transferred to our various district sales organizations on a regular sales program. The department consists of one to three home lighting representatives for each district organization, depending on the size, and operating under a general sales program for the entire company.

At the present time the company does not merchandise the new I.E.S. lamps or any lighting equipment. Sales of equipment necessary for load building are made through dealer cooperation. The home lighting girls do sell lamp globes or can arrange for delivery from dealers of customers' preferences.

Calls are scheduled from the accounting records of customers in the medium kilowatt hour consumption class, with an introductory letter or telephone call. Other prospects are obtained through demonstrations to group customer meetings, employee contacts, dealer and optometrist recommendations.

At the start of the activity, an extensive dealer cooperative and educational program was carried out to introduce I.E.S. lamps and to develop sponsorship of this item among the dealers

Estimated annual revenue from this department that can be definitely checked amounts to $9,446. Annual revenue added since the training period has been consistently in excess of the expenses of the department, having averaged $1.25 of annual revenue per dollar of expense.

Revenue for the last 6 weeks has averaged approximately $200 per month per girl with a ratio of $1.50 of annual revenue per dollar of department expense. The department takes credit for revenue resulting only from actual increases of wattage in the home that have been verified.

The home lighting field is a much larger field than that of the commercial lighting department and will naturally take much more time to obtain momentum. The success of the department very evidently depends, first, on selection of personnel, and second, the training of the personnel. We have found that approximately two-thirds of our organization has been outstandingly successful, and we are now engaged in making replacements to eliminate the weak points. This fall we will have a much more complete and aggressive program than we have had last spring and during the summer.

Portland General Electric Co., Portland, Ore.

By A. C. McMICKEN
General Sales Manager

WE made no effort last year and are making no effort this year to campaign lighting units of any kind with sales crews or through employees. We do sell approved I.E.S. lamps through our several retail stores and our lighting sales engineers and home service girls recommend this equipment and engineer and recommend suitable lighting equipment for commercial, industrial and outdoor jobs; commercial and industrial equipment, however, being provided by the contractor.

At present we are employing only four home lighting girls, working the year round in systematic fashion, among residential customers. We do a small amount of advertising. Leads are secured through our employes and over the telephone, all calls being made by telephone appointment with the prospect. These girls recommend improved residential lighting of all kinds and have dealers send out equipment if the prospect is interested in purchasing new floor or table lamps or similar equipment.

We have three illumination sales engineers at present working with commercial and also with industrial customers and promoting outdoor lighting as well. We use a small amount of newspaper advertising in support of their activities, but depend primarily on mailing pieces and letters to interest and prepare prospects.

We do not feature any particular lamp or equipment, but recommend the equipment which we feel most suited for the particular job.

This Fall, in cooperation with the other utility, this department will foster through the Portland Chamber of Commerce and the Retail Merchants Assn., a special window lighting competition to be held during the Fall Style Window Show. This department also, in cooperation with the Portland Advertising club, will feature a Christmas lighting contest.

In Portland the school board has authorized and made an appropriation for a lighting experiment in the school rooms to determine the progress of pupils under lighting which is automatically turned on and off by photo-electric cells, as compared with pupils of the same age and classes in rooms not so lighted. Blackboard lighting will also be a feature of the ideal school.

A start has been made in lighting fields for the soft ball leagues which have sprung up in this territory, the first field being lighted with 32 kw. and is proving very satisfactory.

San Joaquin Light & Power Corp., Fresno, Calif.

By J. E. HAMMOND
Lighting Sales Engineer

IN April 1934 we started a home lighting activity patterned after the "new approach" method developed by the General Electric Co. We organized the home lighting division under the direction of Miss Mary Webber, of Nela Park. The personnel consisted of five girls and a supervisor.

From the start the activity was a success. We operated the department on the basis of a service to the customer. The girls did not attempt to sell equipment, only told the "Science of Seeing" story and made recommendations based on the needs of each home. The result was that we added an average of 365 watts per home where calls had been made. We made 2,013 recommendations, added 733,622 watts, with an estimated annual revenue of $18,743.48.

Commercial and Industrial—We had four commercial lighting men in the field from April to December. We established quotas of 20 kw. per man per month. These quotas were realized.

The commercial men do not sell equipment, but work through the local dealers and contractors on equipment sales.

Outdoor Sports Lighting—Our night sports lighting load continues to grow. At the beginning of 1934 we concluded that we had just about reached the saturation point on soft ball lighting. We found, however, that 1934 was one of the best years we ever had. Many new fields were added and a great many of the old fields were rebuilt with increased load and higher intensities.

1935 Activities

Domestic—We are operating our home lighting division with the same personnel as in 1934, i. e., five home lighting specialists and a supervisor.

We keep in touch with our dealers who give us some leads, and we find a "Right Light" folder of some help. Each dealer is furnished a supply of these folders for use as envelope stuffers. They were made up by our advertising department from a McCall Magazine article. Our meter books are used as lead sources also. Each home lighting girl is assigned a monthly quota of 18 kw.

We also employ a sight meter plan in which each salesman arranges to leave a sight meter overnight at the home of a customer at least four nights a week. The customer is also given booklets on lighting and allowed to test out his lighting himself, and rearrange and improve his lighting from the suggestions contained in the booklets.

Commercial — We now have three commercial lighting men in the field doing direct solicitation.

We do some newspaper advertising in the fall and winter months. Sales are all through dealers. Salesmen promote the sale and turn it over to a dealer of the customer's selection.

Selling methods are through direct solicitation; leads from dealers and contractors. We do not push any special line of equipment, but recommend the equipment indicated for the job. We endeavor to cover the entire commercial field as rapidly and thoroughly as manpower permits.

Outdoor Lighting — The outdoor lighting consists chiefly of night sports and service station lighting, and it is handled in the same manner and by the same men as commercial and industrial lighting. We spend little time on Christmas tree lighting; it hardly justifies the time and effort. Street lighting has been at a standstill for several years and the promotion of this load is largely left to the manufacturers.

●

San Diego Consolidated Gas and Electric Co., San Diego, Calif.

By A. I. BENEDICT
Lighting Engineer

LAST year's domestic lighting activities centered in a merchandising campaign in which the merchandising department put 8 salesmen in the field, with a supervisor, and sold indirect type of floor lamps from door to door. This activity was carried on for two months and about 500 units were sold as a result of the campaign.

We had no commercial campaign as such, depending merely upon calls for assistance from various sources and "cold turkey calls" from door to door. One of the outstanding jobs, which covered a period of many months of remodeling and lighting changes, resulted in an increase of from 9.3 kw. to 31 kw. of installed lighting.

For this year's activity, we expect to form our Sight Saving Council this coming week. With this council as a foundation we expect to put on an advertising campaign with the Sight Saving Council as a sponsor. This work will be more in the nature of advertising the "Science of Seeing," but, of course, we will recommend that people insist on the I.E.S. tag on any lamps they may purchase and thus be assured of the efficiency of the unit.

The various merchants in town will be requested to have separate displays of I.E.S. lamps. It is our hope to educate the sales people in these stores to the point where they can all talk the same language to the same purpose.

In our own work we are making use of the G.E.-La Salle lighting and sales course in training our own sales people, and we shall try to induce the merchants to put their sales people on the same course.

Our merchandising department is putting a crew of men in the field under a supervisor, who will sell I. E. S. lamps from door to door. Lighting talks will be given, to which merchants may invite their customers. These invitations will be of a printed form and invite the customer, and one or two of his or her friends, to attend these talks. All those who attend will be given a 100 watt lamp bulb free. The invitations will be printed on various colors of paper stock so that we can identify the source of the invitation.

The talks given will probably consist of "Science of Seeing" talks by one of the local eyesight specialists, and the "Science of Seeing" film as was used in the House of Magic at the Exposition, and then a few demonstrations with the light box.

Our merchandising department is cleaning out all floor and table lamps so that when the campaign starts we will have nothing on hand but I.E.S. lamps. We also expect to have a lamp fitting room installed in the store and through this induce other merchants to install similar rooms.

Through our Sight Saving Council, we expect to put an many talks concerning the "Science of Seeing" before various service clubs, P.T.A., Federated Women's clubs, schools, and so forth. Our advertising superintendent has planned some radio sketches and interviews with prominent men covering the same subject.

●

Southern California Edison Co., Ltd., Los Angeles, Calif.

By GEORGE M. RANKIN
Director of Lighting

LIGHTING sales programs as carried on by the Southern California Edison Co., Ltd., are unique in that the domestic lighting is handled by the merchandise department, and consists of direct selling of home lighting units by special crews of salesmen, and the commercial-industrial lighting is handled by the new business department.

In the commercial-industrial field we are using 18 field men, all trained engineers with sales experience. They sell no lighting equipment, all their efforts being devoted to promotional and lay-out work.

When the consumer has been sold the desirability of better lighting, a contractor is called into the picture to prepare an estimate and the lighting salesman follows through with him.

The fact that the company does not merchandise commercial lighting equipment is rather a help to the salesmen, as he is not tied down to any single line and is free to recommend not one but several alternate lines.

Results have been most gratifying in the past year, the load curve showing a steady climb.

The recreational lighting field has shown and will, I believe, continue to show great possibilities. To follow this up, we have designed and had built a number of telescoping poles to carry a 1000-watt open type flood light. These poles stand 5 ft. high when telescoped and they may be extended out to 25 ft. in height. Each pole is equipped with 150 ft. of heavy cord and an adjustable clamp so they may be used on any car. This feature has proved to be valuable, as it permits the use of the pole, not only by the power company man but also by any contractor sufficiently interested to go out and try to sell a job for himself.

These poles have been the means of selling a large number of flood lighting jobs of many kinds, from the lighting of an apricot cutting yard on a large ranch through the field of gasoline filling stations, industrial plants, horseshoe pitches, tennis courts and other outdoor recreation fields.

We find the wattages creeping up on all these types of installations. Soft ball fields starting with 9 kw. have been stepped up to 18 kw. and one of the latest has 30 kw. installed. A football field is now being planned which will be lighted by 96 1,500-watt units.

Likewise the new luminous type of store front has a wide appeal and should offer great possibilities for additional load in the very near future.

The outstanding feature of the whole program, however, is the fact that when the first addition is made to the customer's lighting, the improvements have just begun.

●

Southern Sierras Power Co., Riverside, Calif.

By GORDON F. BLACK
Illuminating Engineer

THE fall of 1934 saw the windup of a a Renu-a-lite sales crew who covered the central and Imperial Valley districts of the Southern Sierras Power Co. The crew of four salesmen under a sales director made a very good showing. Sales approximated a 30 per cent saturation over the territory covered, and resulted in a good load increase, as well as making a start in the homes for better lighting.

This has been the only crew used by this company in lighting sales promotion through merchandising.

Until April 1, 1935, the writer was the lone lighting specialist for the company. At this time, however, another

lighting man was employed, and located permanently in the Imperial Valley.

During the past year the commercial and industrial activities have been quite varied in character. The method of contacting jobs has progressed during the past few years, until at present the services of the illuminating engineer in most cases are requested by our customers. Working through the superintendents of the local offices, as well as in conjunction with our appliance salesmen, air conditioning engineer and other specialists, we assist in the making of plans and specifications in all types and kinds of structures.

Lighting talks and demonstrations are made to the prospect. Various units recommended for the jobs are installed for demonstration through cooperation with local electrical dealers and salesmen only, the power company doing no merchandising of lighting equipment.

Contact has been made with local schools, chambers of commerce and service clubs to promote lighting for night sports, and this has resulted directly, this past season, in at least six more lighted night ball fields; a football field; horseshoe club; several swimming pools; tennis courts; golf driving course and numerous Badminton courses. The latter sport, being promoted as a backyard sport in numerous communities, has become very popular.

There are no definite or special plans prepared for any 1935-36 campaigns by this company. Because our territory is very scattered, and consists mostly of small towns extending from Bishop in the north to the Mexican border, such activities as home lighting crews of either men or women would hardly be satisfactory.

During the past twelve months additional load has also been added by the one lighting man at the rate of over 1.25 kw. for every working day of the year, by average. The estimated revenue is conservatively estimated at $25 per year per kw. The sales method thus proves itself.

No particular equipment is featured in the formal recommendations and specifications prepared for each job, but an attempt is made to fit the job adequately with the most effective equipment the customer can possibly afford to use, and several alternate types and makes of fixtures are listed wherever possible.

The Red Seal Wiring Plan is still being profitably told, and efforts are put forth to interest owners in wiring for electric ranges, water heaters and refrigerators, as well as built-in heating (at least in bathrooms) even if electrical equipment is not to be used at the time of construction.

Surveys have been made in schools and Junior Colleges with diversified good results. One result is usually a talk to the physics classes on the sight meter and basic principles of lighting. This, tied in with increased cooperation with optometrists, is helping to instil the slogan of "Better Light-Better Sight" into the minds of teachers, pupils and ultimately the home. And this has naturally resulted in carrying the story into the store, business and factory.

Light for advertising has been met with greater acceptance during this period of greater competition in all lines of sales, from stores, cafes, service stations, etc., and effort expended in such sales have shown good returns.

•

Utah Power & Light Co., Salt Lake City, Utah

By K. W. BROWNING
Director Home Lighting

THE following is a brief outline of our lighting activity last year and our program for this year.

Domestic—Last year's activity included a campaign on I.E.S. Better Sight lamps and home lighting demonstrations, using 10 home lighting advisors. The following figures include sales by both this company and other dealers in this territory:

Study Lamps—6,960 lamps sold, or total of 7.8% of residential customers.

Reflector type semi-indirect lamps, 300 watts each—2,223, or 2½% of our residential customers.

Pin-it-ups and similar lamps—1,384, or 1½% of our residential customers.

Total kw. load added by the above three items—1,581 kw.

The home lighting advisors made 3,056 complete home lighting recommendations and demonstrations, and added a known total of 348 kw. The total load added by these girls was a good deal in excess of the foregoing figure, which includes only known increase.

Commercial and Industrial—707 commercial and industrial lighting jobs were closed, with an increase of 1,118 kw.

The retail value of all the residential lamp bulbs, lamps and commercial and industrial wiring jobs sold during the seven months — September 1934 to March 1935 inclusive—was $226,000. We believe the activity last year was highly profitable to all cooperation groups and we are preparing for an activity this fall on a larger scale, as outlined below:

DOMESTIC

Personnel—1 home lighting director; 4 supervisors; 37 home lighting advisors; plus part of the time of a large number of other employes.

Advertising and Promotion includes newspaper, radio, bill board, direct mail, exhibits and displays. About twice as much money will be spent on advertising sales promotion as was spent last year. Leads for the home lighting advisors will be secured by sending out letters and also through other employes, dealers and eyesight specialists.

Selling Methods will include both direct sales and through other dealers.

Featuring—Lamps to be featured include all I.E.S. models and also Pin-it-ups, indirect socket extension devices, kitchen units and new shades for existing equipment.

Quotas — 4500 study lamps; 6300 semi-direct 300 watt lamps; 4500 kitchen units; 9,000 pin-it-ups and socket extension devices; 21,000 complete home lighting demonstrations.

COMMERCIAL

Personnel—1 commercial sales director; 2 supervisors; 19 commercial salesmen.

Featuring — Commercial equipment sold only through dealers. The present campaign is set up under the following headings: Signs and bill boards, show cases and show windows, floodlighting, other outdoor lighting, store and office lighting, architects and builders service, and other commercial lighting.

•

The Washington Water Power Co., Spokane, Wash.

By LADNER V. ROSS
Illumination Engineer

LAST year we had a six month's program with three main divisions —lighting merchandising, lighting load building, and lighting education. Under the first heading, lighting merchandising, came the sale of I. E. S. portable lamps by both our company and dealers in our territory. We had 138 dealers lined up to sell I.E.S. portable lamps before the end of our cam-

Crux of the home lighting promotional work is the activity of the home lighting advisers of many utilities. Here are the effective girls of the Washington Water Power Co.; from left to right: Mary Dysart, supervisor; Bonnie Taylor, Margaret Saunders, Dorothy Smith and Gladys Bishop

paign. Our own sales of I.E.S. lamps were made entirely without the help of portable lamp salesmen. We just used our regular appliance salesmen and the part-time of our suburban employees.

Together with contractors and dealers, the company system sold 288,299 lamp bulbs, 2,738 study lamps, 2,405 reflector type lamps, 3,907 pin-it-up and other lamps, and added 1088.44 kw. in lighting load.

In the load building part of our program we carried on much the same as we have in the past, using four full-time lighting salesmen in Spokane and five full-time lighting salesmen in the suburban territory, and five full-time lighting advisors in Spokane only. For campaign purposes we counted only the lighting added to commercial and industrial accounts as of Oct. 1st, 1934, and did not include new business from reconnects or new accounts.

Our educational activity included a very extensive newspaper advertising program along with poster boards, car cards, window displays, radio spot announcements and exhibits in all available fairs, bazaars, etc. In the neighborhood of 5,687 people have heard our message on the new "Science of Seeing," presented largely through the aid of a talking slide film by that name produced by General Electric.

For the coming year we are planning a program more extensive and more ambitious than last years'. We will expand those methods which proved most successful last year, adding to them new ideas we have learned.

In the domestic field we will continue with five home lighting advisors, one of these a supervisor, and we will put on several crews of specialized I. E. S. portable lamp salesmen under competent supervisors. The bulk of our advertising will be directed toward I.E.S. lamps, and particularly designed to make customers "tag conscious." The homelighting advisors obtain their leads through letters and telephone calls as well as contacts at group meetings.

Our own company will engage in the sale of I. E. S. lamps as they did last year, but at the same time will make every effort to encourage dealers to increase their sales of I.E.S. lamps. Only I. E. S. lamps will be featured in our advertising, although one or two small load building devices will be continued from last year. Approximately 6,000 I.E.S. lamps is the combined quota of dealers and company for the seven months' period ahead. About 300 kw. in addition to residential lighting load is expected.

In the commercial field our methods will continue as in the past, except for the addition of a sixth salesman in the suburban territory and four in Spokane, all operating under one supervisor. All sales of lighting equipment or wiring are made through dealers, except in towns where there are no dealers. No particular merchandise or equipment is being pushed. A quota of 2,600 kw. for all commercial and industrial lighting has been set for the seven month campaign. Store, office, school and service stations are being worked most extensively. No program is anticipated in outdoor lighting.

•

Vallejo Light & Power Co., installed six towers with 64 1000-watt Westinghouse flood lights as a memorial to the late Albert Casper, president and manager of the company, at the Vallejo, Calif., high school field last fall. Intensities of 13 to 15 ft. candles are produced on the field

The Electrical Equipment Sales Association of Idaho advertises for better light, and note how a live lumber dealer ties in with his story as to the right paint to deliver the most light reflection

•

• TRI-COUNTY ELECTRICAL ASSN., representing dealers in Santa Cruz, San Benito and Monterey counties, Calif., is planning a meeting to hear the latest developments and possibilities in lighting. The meeting will be at the Hotel Resetar, Watsonville, Sept. 13, at 8 p. m., according to J. A. Schanbacher, secretary. Descriptions will be given of high intensity mercury vapor, sodium vapor, lumiline, and other new lighting units. Selling ideas in connection with the Better Light-Better Sight movement will also be explained, all designed to assist dealers to make more profits and sell more lighting equipment.

•

British Columbians Buy Many Indirect Lamps

Outstanding success marked initial campaigns launched this season to introduce indirect lighting floorlamps in Vancouver, Victoria and other British Columbia points. As a result of two major drives the British Columbia Electric Railway Co. sold 13,000 floor lamps of the indirect type during the past winter.

Even in the spring and summer months the demand continues and the company's main store at Vancouver, B. C., is selling from ten to fifteen lamps per week. During the coming fall an even more intensive drive on this type of floorlamp will be staged. The aggressive merchandising campaign was backed by generous newspaper advertising and the public were invited to telephone in for a lamp to be sent out for trial in their homes. Exceptionally few of those which were sent out in this way came back to the stores. In addition to B. C. Electric sales department stores and independent electrical dealers also smashed all records in standard lamp sales last season at Vancouver as a result of popular reception accorded the indirect lighting unit.

...aids for Better Vision

"Bet-R-Lite" Luminaire

For commercial installations Lightolier Co., New York City, has designed a 3000 series of indirect fixtures carrying the name "Bet-R-Lite." It is available in a wide series of sizes ranging from 15 to 24 in. in diameter for lamps up to 1500 watts. Included are units for the new three-light lamps. It is equipped with a white glass bowl fixed between reflectors to permit a small portion of the light to leak. Efficiency is rated at not less than 76 per cent.

●

Adjustable Student Lamp

Adjustable as to height and also as to position of the light source is the new floor type student lamp developed by Rindsberger Manufacturing Co., Chicago. One model is finished in bronze plate with a fluted sahara satin shade over parchment. A table model also is available. All models are designed for 100-150-watt two filament lamps.

Modern Commercial Unit

Modern tailoring characterizes the design of the new "Trump" luminaire announced by Curtis Lighting Inc., Chicago. Made of "LunaX" aluminum this fixture has a hard, clear protective coating on the reflecting surface and a satin finish on the exterior. The steam hangar is self aligning. The unit is available in three sizes for lamps ranging from 200 to 1,500 watts.

●

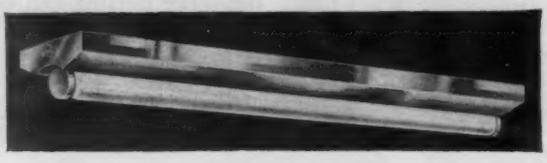
Sight-Craft Torchiere

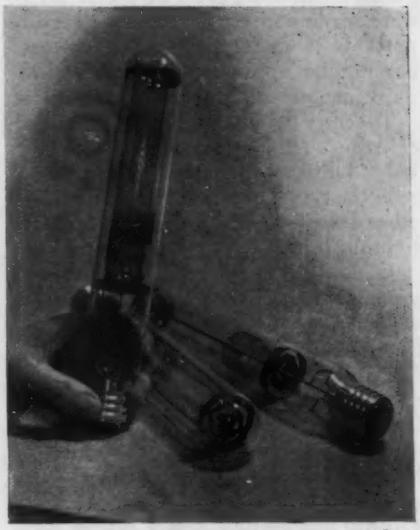
A new light output controlled torchiere is being introduced by the Smooth-Holman Co., Inglewood, Calif. This unit, which complies with the I. E. S. standards for total indirect floor lamps, has a light output control for either 100, 200, or 300 watts. It is of the luminous bowl type, attractively built and has a wide angle aluminum reflector to insure high intensity. This "Sight-Craft" torchiere has been designed for homes and private offices, where new wiring is not available and good lighting is desired.

●

Unit for Luminline Lamps

Day-Brite Reflector Co., St. Louis, Mo., has developed surface type lighting units for one and two light 12 or 18-in. luminline lamps. The finish is satin or polished chromium. They are fastened to the ceiling or wall through a concealed back plate. They are furnished with a bushed outlet in back for mounting over narrow switch type outlet box. The units are suited for modern decorative concepts or applied decoration where space limitation is a factor.





Mercury Lamp

A light source with twice the efficiency of the tungsten filament lamp of similar capacity is the new high intensity mercury lamp announced by the Westinghouse Lamp Co., New York. Consuming 400 watts it has an output of 14,000 lumens and a life of 1,500 hours. Its greenish blue color adapts it for industrial applications. Combined with ordinary Mazda lamps, it produces illumination approximating daylight in color.

●

Kitchen Lighting Unit

Lightolier Co., New York City, offers a new scientifically constructed ceiling light for bathrooms and kitchens with a dual purpose one-piece globe. The bottom of the glass is coated with a fused baked enamel to give shadowless, glareless light, while the top is of clear prismatic glass. The globe screws into the holder. The unit, designated No. 2020, takes up to a 100-watt lamp.

●

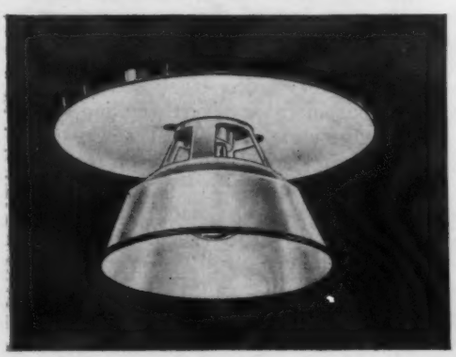
S & M Floodlighting Unit

For sports or general floodlighting S & M Lamp Co., Los Angeles, has announced a new No. 2600 "Red Cap" floodlight for use with 2,000-watt lamps burning in a base up position. Reflector is of pure sheet aluminum finished with the S & M "illuminous process." When additional concentration of the beam is necessary an auxiliary reflector may be installed in the back of the floodlight. Rating is 72,000 cp. without auxiliary reflector and 125,000 cp. with the reflector.

•

Modern Industrial Reflector

An all-steel porcelain enameled unit, white inside and out, known as the "Super-Lume" has been announced by Day-Brite Reflector Co., St. Louis, Mo., as a new item in its line of industrial reflectors. The reflector contains no glass, fits a standard 4-in. outlet box and is designed for ceiling or suspension mounting. The shade is apron type.



•

Sight Light "Plus" Lamp

Sight Light Corp., New York City, has announced the "Sight Light Five," one of a series of "Plus" lamps designed to place light on the working surface. The lamp is designed to provide additional high intensity light over that area of desk top where most close work is done and to protect the eyes from the glare of the light source. The finish is either bronze or aluminum. (Pictured at right.)

Fireside "Garden" Light

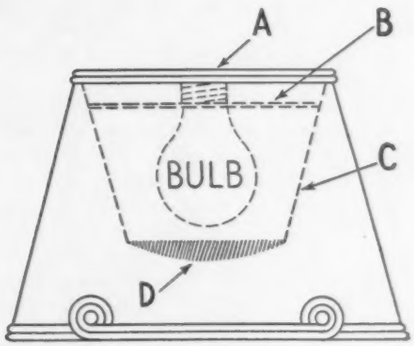
Kim Manufacturing Co., Los Angeles, specialists in the manufacture of garden lighting equipment designed by F. B. Nightingale, has announced a new unit for fireside gardeners known as the "Tinker Bell Light." It combines decorative features with an adequate light source for reading. The flower pot may be planted with vines or other plants. It is finished in apple-green baked enamel.

Commercial Luminaire

Particularly suited for low ceiling interiors is the new No. 5500 luminaire introduced by Curtis Lighting Inc., Chicago. Of shallow design the unit is available in an opaque or luminous type. In the latter the upper member of the bowl is made of opal diffusing glass with the rounded cup at the bottom of "LunaX" aluminum. Both units are available in two sizes.

Bridge Lamp Shader

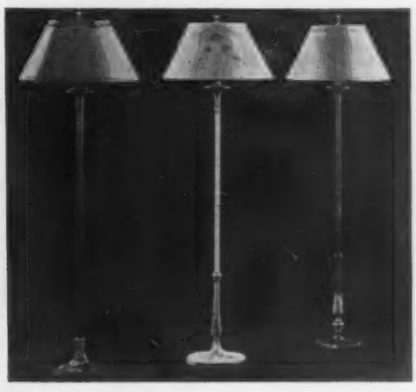
A new bridge lamp shader for converting a conventional bridge lamp into a more satisfactory light source has been announced by the Railley Corp., Cleveland. Based on G-E patents, the device consists of a shade and two deflectors (B and D in the accompanying drawing). It has a screw socket extension (A) and is designed to use a 100-watt lamp. It is available in a variety of colors and designs.



•

New I.E.S. Study Lamps

Variety both as to finish and decorative characteristics describe the new series of I.E.S. lamps designed for this season by the Mutual-Sunset Lamp Mfg. Co., New York City. Several floor and table models have been announced, the accompanying illustration showing three of the former. Shades are lined with white finished fiber.



Cooperation on Parade + + +

[*Forecast of forthcoming cooperative merchandising activities, and review of activities in progress or completed, a summary of cooperation at work throughout the West*]

San Diegans Honor Pioneer Users

PIONEERS in the use of the "new fangled" electrical appliances will be honored by the dealers, utility, and manufacturers in San Diego at a special dinner given by the Bureau of Radio and Electrical Appliances of San Diego County, at Hotel El Cortez, Sept. 6, according to announcement made by J. Clark Chamberlain, manager of the Bureau. Pioneer dealers and salesmen of appliances will also be honored in a tribute to the buying public which had the courage to try and use the first electrical wares.

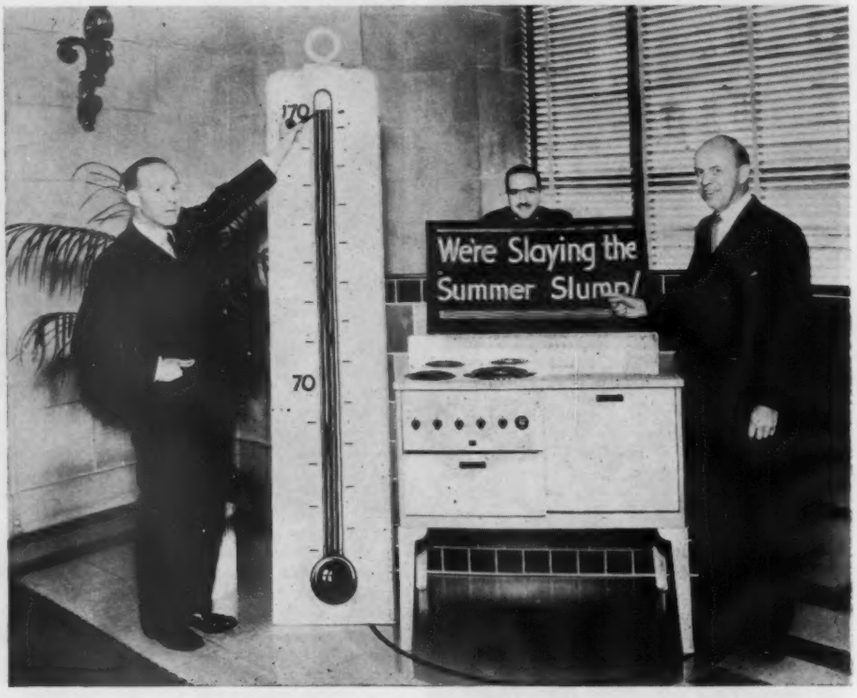
Further to dramatize the pioneer spirit there will be re-enacted some of the first sales of electric appliances. These dramatizations will be re-enacted by professional actors, but many of the original buyers and salesmen will be present to witness the event in retrospect.

In addition to this historical feature the program for the dinner will look into the future as well. The program for the Bureau's cooperative activities with dealers for the balance of the year will be outlined by the secretary-manager. A prominent speaker will also talk upon the real possibilities of electric appliance selling during the next year.

The meeting will inaugurate "Electric Appliance Anniversary Week," which begins Sept. 8. During the week dealers and distributors will make displays by contrasting early models with new and show thus the progress made in appliance design and efficiency. Publicity and radio features carrying the same theme will be run during the period. Altogether, the plan is to make the public of San Diego County thoroughly conscious of the value and improvements in electrical appliances.

Newly elected officers of the Bureau will also be introduced to the dinner gathering. Results of the letter ballot recently held resulted in the election of Harry Calloway, music and appliance dealer, as president. He succeeds E. W. Meise, merchandise superintendent of the San Diego Consolidated Gas & Electric Co., who was president previously. H. E. Brunelle is the new first vice-president, Frank Munro, second vice-president, and Sam Hall, treasurer. The executive committee consists of the officers and H. C. Flinn, Leonard J. Harris, Stuart Ashenberg, W. E. Wendel, Glenn H. Dutton, Arthur Francis, C. W. Kinmore, Ralph French, Ben Rogers, and E. W. Meise.

Summer Slump Slayers



A thermometer that drops instead of rises emphasizes the "cool kitchens" theme of the Pacific Gas and Electric Co. summer electric range campaign. The more ranges sold, the lower the thermometer drops. At 70 degrees 100 per cent of the quota will have been attained. Thermometers were also used by salesmen to hang in the kitchen and living room of prospects to bring home the story. Users were offered a pin-it-up lamp for names of neighbor prospects. Vice President in Charge of Sales R. E. Fisher, left, seems to be pleased at the lowering temperature as H. M. Crawford, general sales manager, brings it down another notch. Clyde Allen, Hotpoint representative who initiated the cool idea, is seen behind the new campaign model range

•

Garden Lighting Boosted by R.E.M.A.

Summer load building that affects electric utilities throughout Colorado, Wyoming and New Mexico has taken on impressive dimensions this season as a result of Electrical League of Colorado and Rocky Mountain Electrical Assn.'s yard and garden lighting contests. Started in 1932 at Denver, this activity spread in 1934 to smaller communities of the state. This year, chambers of commerce and other civic bodies in the larger area are behind the movement, guided by local units of "The Electrical League" (R.M.E.A. chapters organized at strategic points). The Electrical League, tri-state in scope, does considerable advertising and works in cooperation with local newspapers. Cash prizes are given in each town for the best illuminated yards and gardens. Special awards are made for the most impressive rock gardens, recreation areas and lawn furniture ensembles.

A number of wealthy Denver people have installed spots, floods and colored lighting equipment running into considerable money and heavy killowattage. These outstanding jobs are not entered in the contest, a spirit of sportsmanship prevailing in favor of those home owners whose financial limitations will not permit lavish installations.

The contagion spread to Denver's city park, where a new "electric keyboard" throws a gorgeous variety of chromatic effects on a fountain in midlake.

Woman's Comittees Build Dealer Appliance Sales

DEALERS in the southern California area are beginning to realize that the women employees of Southern California Edison Co., Ltd. are among the best friends that they have. They are also realizing how influential the enthusiasm of these girls is in creating sales of domestic appliances of all types and character. The women's committee of the Southern California Edison Co. this year set itself a definite program of load building and cooperation with dealers. Some of the efforts have been astonishing in their effectiveness.

An idea of the scope and effectiveness of this work is given in the June Bulletin of the Edison women's committee, of which Jeanette I. Rees is editor. Among the load building accomplishments listed are the following:

Montebello girls sponsored a dealer and dealer-salesman meeting and planned with the dealers to hold a spectacular demonstratoin of electric oven canning for the dealers' customers and prospects.

Santa Barbara girls turned in 498 prospects since Sept. 1 of last year, of which 175 have been sold appliances.

Santa Monica's chairman reported that to date the girls have been responsible for the following additional load: 55 floor lamps, 155 lighting units, 30 washers, 145 refrigerators, 11 student lamps, 5 ironers, 69 ranges, 38 water heaters and a radio. Last fall the Santa Monica girls staged a garden lighting program, inviting prominent local women and heads of women's clubs. As the result of this program more than one garden lighting installation has been made.

Pomona girls, while not turning in a record of prospects, reported many sales of student lamps and appliances.

San Bernardino girls' committee staged a public relations load building program in the store of one of the dealers of that city who had a complete all-electric kitchen installed. With the cooperation of the dealer they arranged to have "Bess Meals," home demonstrator of the George Belsey Co., give cooking classes. There was a large attendance and many prospects secured. In the refrigeration campaign 266 of the prospects turned in by the girls had been sold up to May 28.

San Joaquin women's committee, divided in two competitive teams, turned in a total of 479 prospects from Sept. 1 to June 30, of which 240, or more than 50 per cent, have been sold. Even since March the total prospects turned in were 286 with 190 of these sold. The appliances sold were: 69 ranges, 37 water heaters, 39 refrigerators, 15 floor lamps, 2 student lamps, 22 lighting units, 1 radio, 1 washer, 1 ironer and 3 miscellaneous small appliances. The average number of prospects turned in by each of the 30 members was 15 and the average sold per member was 8.

Santa Ana girls staged a big demonstration when a new electric kitchen was installed in the Orange, Calif., office.

Even the general office girls have staged demonstrations of new ideas in appliances and turned in a number of prospects for sales. Altogether there are twelve districts in which groups of girls are participating in the load building activities of the women's committee. A review of some of the other activities of the women's committee along social, educational, public relations and employees activity lines shows a similar record of accomplishment and improvements both of company relations and personal benefits to the girls themselves.

•

B. C. League Reports Business Built for All

REMARKABLE progress has been made during the past six months by the Electrical Service League of British Columbia, according to reports presented at the semi-annual meeting held recently at Vancouver, B. C. The work of the League during the first half of the year was divided into eight groups, and in each case marked progress was made.

The major activity was the continuation of the Red Seal work. An encouraging feature was notation on the improvement in the value of electrical installations in the average new houses, and a slight gain in number of homes built during the period. In all, there has been an increase of 43 per cent in the number of certificates issued during the first half of the year over the same period last year.

In the realm of commercial lighting the League cooperated closely with the central station. Actual merchandise sold and installed by electrical contractors as the known result of the League's efforts exceeded $1000. Prospective business now being developed by the League in connection with commercial lighting is known to be in excess of $6000. During the past six months 47 new lighting plans were prepared on request for stores and factories.

Considerable interest has been aroused through the work of Miss Jackson of the League staff, who with assistants in her department furnished by the central station, has been calling on homes, on invitation, to test lighting. These young ladies are not saleswomen, and have nothing to sell other than the general idea of good lighting in the home, but as direct results of their efforts in educational work it is known that $1550 worth of lamps and other lighting equipment has been sold, while prospective sales are estimated at $3806. In addition to arousing interest in better lighting these young ladies have also turned in many prospects for major appliances.

Under the direction of "Jack" Priestman, assistant secretary of the League, a variation of the cooking school idea has been supervised and conducted with outstanding success. This is a Homemaker's Course, which runs for a period of six weeks and covers electric cooking, proper methods of utilizing electric refrigeration, and home lighting.

The League has also perfected plans for erection of a model bungalow and it is expected that preliminary work done in this regard will take concrete form in the near future.

The "Better Light-Better Sight" campaign has been taken up by the League on a scale without parallel in Canada and an interesting sidelight of this effort has been the paving of the way for formation of the B. C. Sight Saving Council, in which the electrical and the optical industry is joining operations.

Home modernization work has been launched by the League during the past year, and as a direct result one kitchen is now being remodeled at a cost of $1200, of which the electrical industry will receive $495 for additional outlets, wiring, and major appliances. Many other modern kitchen plans are being prepared.

One of the most encouraging features of the semi-annual report is the section touching on the closer cooperation now existing between the League, the Vancouver Electrical Assn. and the central station. As a result of this the power company is no longer handling its own installation work, or repairs to appliances, but is placing all its installations through the Association, which divides it according to arrangement among its contractor members, and bills the power company twice a month for all work done. It is esti-

mated that almost $30,000 worth of work has already been done by the members of the association for the power company under this arrangement, and manufacturers and wholesalers received $20,000 of this amount for material. As a result of the close cooperation established much better wiring work is being done in Vancouver.

R. Hall, secretary of the League, an authority on illumination and wiring, has personally conducted a series of educational meetings for wiremen. One of the features of the concluding sessions of the series was the presenting of plans of a home to the student tradesmen, and the awarding of prizes to those who laid out the best Red Seal wiring plan for the home. This contest proved effective in stimulating much interest. The first prize was won by E. Hammersmark of North Vancouver.

•

Child Health Show Stresses Good Light

WORKING together with the Optometrical Assn., the Medical Assn., the Dental Assn., the superintendent of schools and health officers, the 20-30 Club of San Jose staged a Children's Better Health Week from May 27 to June 1 in which Pacific Gas and Electric Co. provided the demonstrations illustrating the need for correct lighting for good eye conservation. A committee of the young business men's club, of which Edward Clark, sales department, P. G. and E., was general committee chairman; a citizens' advisory committee including all the presidents of the Medical and Optometrical Assns. and the superintendents and school physicians as well as health officers and home economists, made arrangements for a show in a vacant store on South First St., San Jose. During that week speakers appeared before schools, service clubs, Parent-Teacher Assns. and social welfare groups pointing out the importance of good health. Both newspapers gave ample support to the event and a budget for financing the event was made up of contributions from the Medical Assn., Dental Assn., Optometric Assn. and P. G. and E. Co.

The Medical Assn. made a display of children's care and welfare. The Assn. of Optometrists displayed and demonstrated sight correction and preservation. The Dental Assn. displayed and demonstrated the proper care of teeth. The utility company had an illumination display demonstrating proper lighting and the measurement of light. The city and county school departments displayed methods of health building among children. The county health department and the Red Cross displayed proper care and treatment of foods as well as first aid treatment.

A small auditorium was curtained off at the rear for the showing of sound pictures and slides. The sound slide film, "Marvel of Vision," by Floyd Gibbons, treating of the necessity for good lighting, was shown.

Dealer Sales Meetings, Bonuses Feature Edison Range Drive

COOPERATION with electrical dealers in local territory is the keynote of an electric range and water heater sales campaign now being sponsored by the Southern California Edison Co., Ltd., according to W. L. Frost, vice-president in charge of sales. The campaign will continue until Oct. 31.

"Since the Edison company does not sell ranges and refrigerators, it has adopted a program of close cooperation with local dealers," Mr. Frost said. "The present campaign set-up includes numerous sales helps for the dealer — window and counter display material, envelope stickers, and an energetic newspaper advertising campaign blanketing the Edison service territory. Prizes for dealer window displays featuring the old-fashioned and modern methods of cooking are also offered by the company.

"One of the outstanding activities of the campaign is a series of special sales conferences being held by the Edison Company for range and water heater dealers and salesmen. Five hundred sales people attended the first series of five meetings recently held at Pomona, Ventura, Visalia, and at the Edison building, Los Angeles, for salesmen from Pasadena, Santa Ana, Santa Monica and the company's central division. A second group of similar meetings will be held in September, and a third in October.

"These sales schools are being held to assist salesmen to improve their selling technique and to advise them of the most recent developments regarding electrical service in the home. The details of the current Edison campaign are also explained, so that the dealers may coordinate their sales efforts with those of the company, to mutual advantage.

"Local electrical dealers are participating fully in the sales movement. An excellent line of electric ranges and water heaters are on display, and attractive prices and terms combine to make purchase especially attractive now. Free installation of electric ranges in most homes is another buying incentive offered during the present campaign.

"The sales promotion for electric ranges is predicated on ten important attributes of electric cookery: economy, dependability, health, modernity, tastier foods, speed, time-saving, coolness, cleanliness and durability. 'Let Your Next Range Be Electric' is the feature slogan of the campaign.

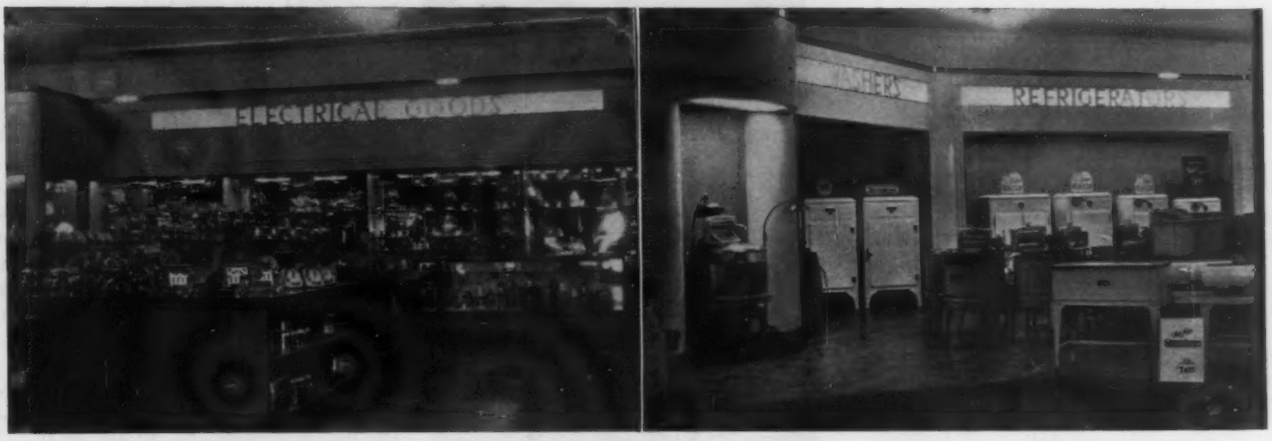
"Newspaper space in great volume is the basis of the advertising program. The Edison Company has long been convinced that newspaper advertising is one of the most effective methods of arousing consumer interest, and, as in previous sales movements, the company is making generous use of it during this campaign. All advertisements direct the reader's attention to local dealers' stores, thereby directly benefitting local businessmen."

As a means of making the meetings distinctly worth while as well as to offer dealers help in one particular which is especially vital, a special offer is made to the dealer salesmen. Only field salesmen are eligible for the bonuses and awards which are offered by the Edison Company, and to qualify for such they must attend the dealer sales meetings to obtain complete information of the company's domestic rates, selling methods suggested, and selling features of electric cookery and water heating. A bonus of $2.50 for each range, $2.50 for each water heater, or a bonus of $6.00 where both are sold at once, is offered the dealer salesmen who attend these sales meetings. A card signifying the salesman's eligibility for a bonus is issued at the meeting to those attending. It is good until the next series of meetings.

These bonuses are paid semi-monthly after being checked against installation records. Besides these bonuses prizes are given for the dealer salesmen who make the best record of sales during the campaign, in much the same way that utility sales crews used to be compensated when the utility merchandised ranges itself.

The plan is designed to assist dealers to obtain and to train good appliance salesmen, a thing they would find difficult to do alone. It fills the gap which usually occurs when a utility ceases direct merchandising and dealers

Seattle Store Modernizes Appliance Department



Frederick & Nelson Co., Seattle department store, modernized its electrical department recently in a very thorough manner. Moved from the basement to a large department on the third floor the pictures above indicate how clean-cut and attractive the new surroundings were made. At the left is the small electrical appliance exhibit surmounted by a luminous sign and fitted with lighted display cases. At the right is the large appliance section with attractive niches to set off refrigerators, washing machines, ironers and other domestic appliances. Modern lighting by means of panels and inbuilt fixtures is used to advantage. A feature of the department is a repair shop in the department, visible to the customers, and which brings the trade directly in contact with the new department

do not or cannot individually follow up with as aggressive sales methods as those of the utility. H. C. Rice, merchandising manager, says that the plan is not necessarily to establish a precedent, but is designed to assist dealers to obtain and hold good salesmen; also to help dealers level off their sales peaks by bringing in range and water heater sales to follow the big summer refrigeration sales. About 2,500 ranges and 1,500 water heaters are aimed at as a goal for this campaign.

In the sales meetings it is pointed out by Mr. Rice that the company's rate now offers any average citizen with electricity cheaper than T.V.A. rates if his is an all-electric home using about 600 kw. a month for range, water heating, refrigerator, lighting and appliances. Such a user gets his energy at an average of 1.7 cents per kw. hour.

NEW WIRING PLAN, TOO

Another simplification and selling feature is a revision of the company's wiring offer. For the past year the company has made a $25 cash allowance to the dealer to assist in the wiring cost, plus a $10 allowance on a genuine old range replaced by electric cooking. Now a new combination switch cabinet is offered, whose cost to the contractor would be about $22, plus a $20 cash allowance and the same $10 allowance on the old range, in effect an increase in allowance. The switch cabinet contains a 100 amp. main switch, two 60 amp. switches, one for range, the other for lighting, and a 30 amp. water heater switch all contained in one weatherproof cabinet to be mounted outside the house.

Dealers in municipally served areas supplied power wholesale by the Edison Company have been so anxious to have similar sales meetings merely for the purpose of helping them sell more ranges that Mr. Rice had arranged to conduct a series of meetings in Riverside and other such cities in cooperation with the municipal utility.

"An outstanding increase in sales of electrical home equipment in Edison territory was made during the first six months of 1935," Mr. Frost said. "The most substantial growth occurred in the sales of electric refrigerators, which advanced from 8,955 in 1934 to 16,171, a gain of 81 per cent. Radios were second, with an increase of 6,531 over 1934. Washing machines ranked third, 3,610 more being sold this year than last. Notable gains in the sales of other electrical appliances were also recorded."

●

• A WATER SYSTEM campaign, on the lines of the Southern California Edison Co., Ltd., is being planned for the Fall, according to Robert McFadden, manager of power sales. Contrary to previous opinion it was discovered that a fine market existed in the rural areas served by this utility for pressure water systems. The plan is being worked out cooperatively with equipment dealers and manufacturers.

Contest Stimulator for Society Ironer Drive

LAUNCHING another of its electric ironer campaigns, the Electric Appliance Society of Northern California, according to Bert Reynolds, promotional director, will offer dealers not only the prospect of more ironer sales but an opportunity to win a prize for accomplishment. Prizes are to be awarded for dealers of various groups or volumes, according to the sales they make over their record of sales during April, May and June, used as an average. Prizes of $60, $40, $30, and $20 are offered the various groups. Forms for entry into the contest are being made available to dealers by the dealer contact men of the Pacific Gas and Electric Co.

Feature of this campaign, which runs during the month of September, is an offer of a free hand towel to every woman who comes to a cooperating store and actually irons it herself on one of the ironers. The same offer is carried by the utility, which does not sell the ironers but will conduct a cooperative display of makes loaned by the dealers of each city for the purpose.

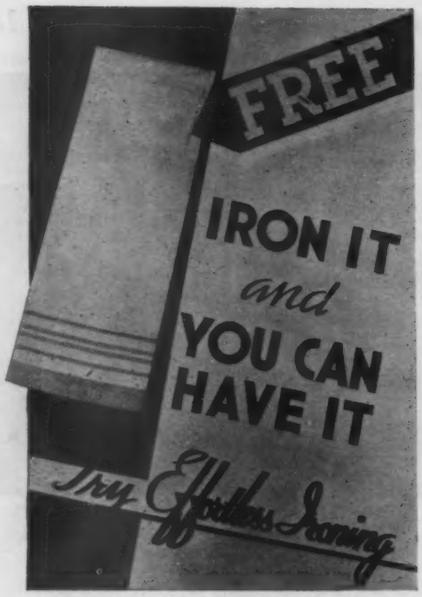
Dealers participating get towels at cost from their ironer distributors. Those given away by the power company will be furnished by the society. Posters containing a sample of the towel are to be displayed by the dealers in the campaign. The offer of the free towel is not to begin before Sept. 10 in any of the cities in which the campaign will be conducted — namely, Berkeley, Burlingame, Chico, Grass Valley, Marysville, Oakland, Redwood City, Sacramento, Santa Rosa, Salinas, San Francisco, San Jose, San Mateo and Stockton. The makes of ironers participating in this drive are Apex, Easy, General Electric, Thor, Conlon, Iron-

rite, ABC, Meadows, Norge, Westinghouse, Prima, and Horton.

Besides the customary newspaper advertising, to which dealer ads will be solicited by the newspapers for tie-in, there will be demonstrations staged in power company offices in each of these cities for a period of 17 days, beginning Sept. 10, from 12 noon to 4 p. m. daily. One model of each participating make of ironer will be displayed if furnished by a local dealer, and a list of the dealers handling that make will be posted in the P. G. and E. office prominently.

The society's two educational directors, Miss Bertha Mae Hixon and Miss Gladys Byrne, will devote all their energies to visiting all dealer stores possible during the campaign and helping them to arrange displays, demonstrations, advertising, and promote selling.

Emphasis throughout the campaign will be made on "effortless ironing" with an electric ironer. Dealers who tie in have the assurance of the successful sales that have characterized the past campaigns on ironers conducted by the Society.



Poster, in which a towel is placed, offers prospects the towel if they actually iron it themselves in the store. Dealers who cooperate in the Electric Appliance Society campaign on ironers will feature this card

• JOHN A. BAKER has returned to Electrical League of Colorado as full time field representative, beginning Aug. 12 on the job he relinquished two years ago. Well known to the electrical clan in Denver and throughout Colorado, John Baker served eight years, from 1925 to 1933, at the post he now resumes, contacting building contractors and architects, and, by his promotional efforts, stirring up business that greatly benefitted all branches of the electrical industry. Recently he has been associated with Public Service Co. of Colo. as a salesman in the electrical appliance department.

•

• A MIDSUMMER CAMPAIGN on electric insect traps has been inaugurated by the San Joaquin Light & Power Corp. The traps are to be advertised not only for residential usage but for packing houses and in the fields.

•

• LARAMIE, WYO., held a three-day electrical exposition early in June featuring what is called a "Homemakers' Highway," displaying various appliances which make for convenience.

DEALER SALES REPORTS—JUNE-JULY, 1935

A Summary of the Dealer Reports Compiled by Associations, Societies, or Bureaus, or Dealer Contact Departments of Utilities

APPLIANCE	P. G. & E. Co.[1]		San Diego Cons. G. & E. Co.[2]		San Joaquin Lt. & P. Corp.[3]		So. Calif. Edison Co., Ltd.[4]		Utah Power & Lt. Co.[5]		Wash. Water Power Co.[6]		Idaho Power Co.[7]	
	*June 1935	7 Mos. Dec.-June	July 1935	Year to date	July 1935	Year to date	July 1935	Year to date	July 1935	Year to date	‡May 1935	Year to date	July 1935	Year to date
Ranges	301	1,634	29	164	136	1,045	460	3,322	149	1,204	42	193	253	1,835
Water Heaters	217	1,303	30	253	69	444	207	1,851	51	275	12	79	744	4,566
Air Heaters—aux.	150	3,244	6	525	.....	52	19	609	.....	110	57	275	1	84
Air Heaters, 220	16	424	.....	.....	46	360	.....	.....	.....	.....	.....	.....	.....	.....
Refrigerators	6,614	21,655	996	3,255	778	4,957	5,871	22,042	1,376	5,722	808	2,502	.....	.....
Dishwashers	13	53	.....	.....	3	13	.....	.....	.....	2	.....	.....	.....	2
Washers	2,399	15,537	419	1,763	331	2,194	2,958	16,323	868	5,263	392	1,749	332	2,667
Ironers	732	4,618	82	301	75	393	530	2,509	42	251	36	157	20	243
Vac. Cleaners	1,515	12,541	163	868	77	543	940	5,853	401	2,649	161	878	52	574
Radios	4,261	37,545	738	5,286	316	3,750	3,554	25,609	572	4,865	492	3,043	155	1,918
Mixers	500	2,630	43	389	69	542	387	2,359	99	1,300	93	384	51	359
Cookers, Caseroles	.....	.....	42	142	24	124	49	304	84	215	233	970	8	41
Irons	.....	.....	302	1,722	345	2,208	1,446	8,695	889	5,721	453	2,033	353	2,216
Waffle Irons	.....	.....	111	866	100	689	357	2,616	298	1,465	135	656	76	574
Toasters	.....	.....	163	1,225	111	791	583	3,766	464	2,533	363	1,804	132	865
Table Stoves, etc.	.....	.....	44	311	133	800	287	1,737	749	3,769	.....	.....	326	1,332
Heating Pads	.....	.....	29	398	.....	.....	68	1,170	31	703	95	451	7	166
Curling Irons	.....	.....	.....	.....	.....	.....	67	435	215	1,407	.....	.....	.....	.....
Coffee Makers	.....	.....	133	806	92	644	370	2,303	251	1,175	342	1,343	111	820
Sewing Machines	969	8,004	24	124	.....	.....	.....	.....	.....	.....	73	351	.....	.....
Clocks	.....	.....	.....	.....	83	600	316	2,420	161	1,228	332	1,202	23	183
Fans	.....	.....	.....	.....	.....	.....	1,019	1,818	603	1,110	24	54	507	748
Floor Polishers	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sun Lamps	.....	.....	.....	.....	1	15	36	202	3	45	1	19	5	118
Reflector Lamps	.....	.....	.....	.....	35	548	.....	.....	413	4,954	141	383	136	1,021
Misc. Lamps	.....	.....	.....	.....	.....	.....	.....	.....	861	5,500	1,422	5,987	220	3,190
Yard Lights	.....	.....	.....	.....	78	347	.....	.....	.....	.....	.....	.....	.....	.....
Misc. Small Appl.	.....	.....	226	1,548	339	1,361	453	3,020	5	111	.....	.....	.....	.....
Total Dealers	.....	1,400	.....	.....	.....	.....	577	577	.....	.....	.....	.....	.....	.....
No. Reporting	.....	.....	.....	.....	107	112†	529	508†	.....	.....	.....	.....	.....	.....

* July Report was not available at time of going to press. † Arithmetical average number of dealers reporting since first of the year.

‡ June and July Reports were unavailable at time of going to press.

[1] P. G. and E. reports obtained only on major appliances upon which accurate reports are available from dealers' accounts. Ranges, water heaters, and air heaters include company and dealer sales. Total dealers include gas as well as electric dealers. First report of year 1935 starts with Dec., 1934, and will be cumulative from that month.

[2] Gathered by Bureau of Radio and Electric Appliances of San Diego County. Clocks, fans included under miscellaneous.

[3] Includes dealer reports from Midland Counties Public Service Corp. territory also. Compiled by Valley Electrical Supply Co.

[4] Includes reports from dealers on San Joaquin Valley system of the company as well as Southern California areas served. Comparative figures of same month last year indicates improvement.

[5] Includes Utah Power & Light Co. territory in Utah, Idaho and Wyoming. Also Western Colorado Power Co. territory. Dollar value of appliance sales in June, 1935, is over 300,000 ahead of sales in June, 1934.

[6] Dealer sales only for Spokane and company's territory. Company sales not included. Table stoves, grills included with cookers.

[7] Figures compiled by Electrical Equipment Sales Association.

Bill Jones Speaks + + +

about Reversing the Ladder

"WELL," mused Bill Jones, "it is quite evident that the country's Master Planless Planner is convinced that a burning house is a more thrilling spectacle than is a house building."

"———*———!!———," sputtered the Manager.

"Quite so," said Bill. "This is a great world—only it takes one so long to get used to it. Ignorance has always been abused a lot more than it has deserved. Being cock-sure of things which aren't so is a blamed sight worse."

"I suppose," grunted the Manager, "that you are saying something, but if so it is hardly discernable. What I am bothered with is how to regain the lost confidence of the public."

"You haven't lost the confidence of the public," said Bill, "for the simple reason that you never had it, and over a period of time we seem to get just about what we deserve. Only a corpse is indifferent to public reaction. When you, who were not born in the untutored, uncultured West, was a little chap you heard a lot to the effect that 'as you sow, so shall ye reap.' That may be good philosophy and it may be good religion, but it is more likely to have been written by a fisherman than by a farmer, for a farmer would have said instead, 'if you sow nothing you reap weeds.' It requires laborious preparation of the soil, intelligent seeding, constant culivation, care and supervision to raise a crop worth harvesting."

"Well, suppose you were a manager—just how would you start nursing those little seeds which you seem to think would sprout and grow up into sturdy trees?"

"Well, first of all I would go into executive session with myself and ask some pertinent questions. First, who or what can put my company out of business or so hamstring it that a 'death sentence' would come as a welcome relief? Obviously, the answer to this one is the people. If so, the public is the most important factor insofar as my outfit is concerned. If I concluded to accept that fact, I would nail it down so securely that I would stumble over it every time I stepped. The public is the field which must be cultivated.

"Who are the workmen the company sends out to plow and seed this field? Who is the company? Is it the manager? No, as a matter of fact the manager personally is the least important member of the company so far as this job is concerned. Managers may be removed, replaced or die, and even five years later three out of four of the customers will not know or care that any change has taken place. The company is really that group of individuals who are in contact, and do business, with Mr. and Mrs. John Customer. It is the meter reader, the collector, the telephone girl, the salesman, the complaint clerk and the desk cashier. These are the people who represent the company —who are the company. Such being the case, with characteristic and blundering nonchalance, your industry insists on being represented by the most poorly equipped and the poorest paid employees on the payroll to do the most urgent job confronting the business. In one single day the telephone girl can do more damage to your relations with those who pay your salary than you can undo over a period of years. The same is true of the meter reader and all of the other employees which you rate as relatively unimportant. You certainly must consider them unimportant, for you pay them the least, and quite generally you don't even know them—they, who are your company's ambassadors to a far greater extent than any or all of your executive staff. Generally these employees are not even trained—just happen. They are recruited from the young people who come to your company simply 'looking for a job.' If they seemingly make good in these stopgaps the routine decrees that at some time in the dim future they will be promoted to the accounting deparment, to the mechanical or sales departments.

"'Promoted.' Yes, from a salary standpoint, which unfortunately is still considered to be an unanswerable measure of worth. So, you 'promote' these tyros into jobs relatively less consequent; and the greater their salary increases, the less important do they become in the solution of your vital problem. The higher position the more remote the personality.

"Reverse the process and you will begin to get somewhere. Instead of starting these people at what you would please to call the foot of the ladder, why not turn the ladder upside down and see what happens, if anything. Let transfer to a contact job be the reward for merit and adaptability in any and all departments. Why shouldn't the accountant, the meter room worker, the power house assistant, the operating man, the stenographer, be promoted to what is a far more important work—public relations? Instead of turning your most vital job over to the lowest paid, make them the best paid? After a couple of days, or after a couple of weeks, the new $100 a month recruit inducted into the power house can operate the plant indefinitely—IF nothing goes wrong. But the chief of that power house receives many times that $100 salary because you have learned the unforseen emergencies and situations call for real knowledge and experience and that without these your mechanical equipment may, in the twinkling of an eye, become junk, or at least temporarily inoperative. So you are confronted with two problems regarding your so-called minor contact employees. First, their ability to fill the position assigned to them and the ever present possibility of the irreparable damage they can, or may, do to the most expensive and most delicate machinery under your control —public good will.

"If you double the present salary of your telephone girl or other contact employees, or replace them with others who are worth double or triple, you even then will only be approaching adequate recognition of perspective. Thirty minutes instruction will send a bright young man on his way reading meters, but what he can do, even unintentionally, to change tolerant customers into militant antagonists to your company, is something. Your business has passed from the mechanical to the marketing age. Have you done likewise? The answer to this is going to determine your fate — and it should. Friendly customers are the foundation of any business and——"

"I'll have to interrupt you," said the manager, "I must go to the Chamber of Commerce luncheon. We are to frame some resolutions to telegraph our congressional delegation about getting PWA money for a municipal swimming pool. It is mighty important to this community.

"Yes," mused Bill, "I guess it is. One of the reasons why we should all love the Lord is because He gives us so many people to laugh at — including ourselves."

Rural Load Building + + +

Electrical Soil Sterilization Pioneered in Puget Sound Rural Sales Program

ELECTRIC soil sterilization has a definite place in the rural electrification program according to experience of the Puget Sound Power & Light Co. over the past three years. Appreciable increases in revenue may be developed and at the same time a distinct service rendered to the greenhouse operator according to J. C. Scott, agricultural engineer of that company.

Experiments which resulted in the perfection of suitable equipment were started in 1932 in collaboration with the Entomological Laboratory of the U. S. Department of Agriculture at Sumner, Wash. The problem was attacked with the knowledge that the damage done to plants and cuttings in greenhouses on account of pests harbored in the soil represented an almost incalculable loss. Furthermore it was known that the soil presented a barrier against fumigation and chemical disinfectants and that heat was the most practical and effective method of freeing it from harmful bacteria and other pests.

Two methods of electrical sterilization were worked out, one employing metallic plates permanently imbedded in the soil on greenhouse benches and the other consisting of a portable sterilizer for treating the soil to be placed in pots and flats. Fig. 1 shows a drawing of the type of sterilizer finally perfected and recommended for the latter process, which is the most practical and popular.

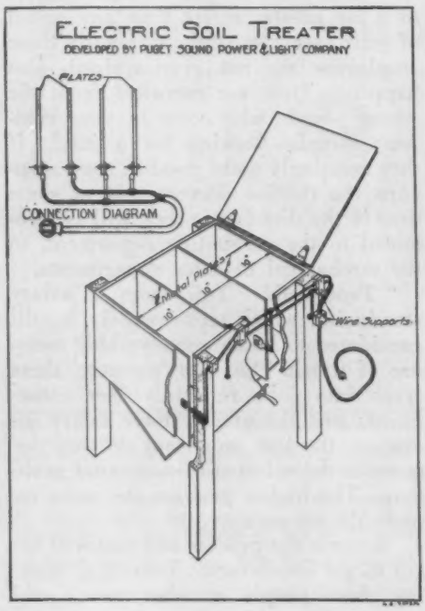
Experiments indicated that a temperature in excess of 180 deg. F. was necessary for satisfactory results. Maximum temperature never exceeds 212 deg. F. since the heating effect is dependent upon the amount of moisture in the soil. This was found to be one of the controlling factors and recommendations of the company are that the soil be moistened to a degree suitable for planting at least 24 hours before it is placed in the sterilizer. Two to 2½ hours was required to sterilize one batch of soil, although this may vary with the type of soil and the degree of moisture. Average consumption taken from records of actual installations is 25 kw-hr. per cu. yd. of soil treated.

Growers who have utilized electric soil sterilization are enthusiastic over the results. Sandel Gardens, Inc., Seattle, has used a one-half cubic yard sterilizer for two years and reports that this method is "the most satisfactory from the standpoint of results, convenience and economy." This greenhouse operator produces 750,000 bedding plants, 25,000 lb. of tomatoes, 2,000 doz. cucumbers and 30,000 pompom chrysanthemums annually. All soil is sterilized and losses from fungus diseases, pests and weeds are almost completely eliminated.

Similar savings have been reported by Howard E. Andrews, another Seattle greenhouse operator who specializes in growing azaleas. Losses ranging as high as 1,500 cuttings were experienced prior to sterilization of the soil due to the inroads of the strawberry weevil. During the 1934-35 season some 18,000 cuttings were started without a single loss from these pests. In addition the labor of eight weedings of the flats in which the cuttings are started was eliminated.

Radio broadcasting during the company's regular farm electrification hour on the air has been one of the methods used in popularizing electric soil sterilization.

Type of electric soil sterilizer recommended by the Puget Sound Power & Light Co. The metal plates are 10-gage galvanized iron with the edges beaded. The bottom is hinged to facilitate emptying.



Light Traps Control Insects in Vineyards

Widening of the field of application of colored light in electrocuting traps for insect control is indicated in experiments being conducted by Prof. W. B. Herms and Joe K. Ellsworth of the University of California. Reporting at a recent meeting of the California Committee on the Relation of Electricity to Agriculture, Prof. Herms cited the results of experiments conducted on control of the grape leafhopper last year which led to extension of experimental work in California vineyards this year.

Quoting from a paper presented at the Pacific Coast Section meeting of the American Society of Agricultural Engineers, Prof. Herms stated that "Monolite" traps (Electrical West, Nov., 1934, page 22) equipped with midnight blue, red, and pale blue gaseous tubes and 60, 100, 150 and 300-watt inside-frosted Mazda lamps were employed in the experiments. One trap per acre provided the best control. Results of the kill for the various types of lights are shown in Table I. With the midnight blue lamp 88 per cent of the leafhoppers killed were females.

Table I—Number of grape leafhoppers captured per night in light traps with various colored lights of different intensities.

Color and intensity of lights	March 18 to June 1	July 24 to Aug. 23	Aug. 27 to Oct. 23
60-watt midnight blue tube	764	517	1789
120-watt pale blue tube	...	...	4631
60-watt red discharge tube	867	463	...
60-watt frosted Mazda lamp	399	...	...
150-watt frosted Mazda lamp	...	402	...
300-watt frosted Mazda lamp	...	1432	...

Besides effecting a positive control of the vinehopper, Prof. Herms said, the insect electrocutors proved of great value in the control of such insects as moths of the corn ear worm and the army worm. Five additional experiments are underway at the present time at Madera, Delano, Modesto, Escalon and Tracy. It is believed that successful operation of these five installations will establish the light-electrocution method as one of the primary methods

of control for the grape leafhopper in California vineyards.

Additional proof of the efficacy of these light traps in the control of the artichoke plume moth was reported by Prof. Herms. Fields in the Half Moon Bay area in which "Monolites" were installed showed approximately the same reduction of worminess as those in which experiments were conducted in 1934. The general average of 25 to 30 per cent infestation was reduced to 3 to 5 per cent in the fields equipped with lights. The test plot of 1934, which was not treated this year, reverted to 20-25 per cent worminess.

Increased acreage planted to tomatoes together with the susceptibility of this crop to pests has resulted in the installation of lights in a 5-acre plot at Woodbridge for testing purposes. In addition further work is being done on coddling moth control with three traps to the acre.

With pure food authorities placing increasing restrictions on poisonous sprays some other method of insect contro y must be developed.

●

Poultry Brooder With Concrete Base Is Successful

Considerable success is being enjoyed by poultrymen in the San Joaquin Valley with a novel electric brooder which consists of soil heating cable embedded in concrete. The brooder is the outgrowth of experiments conducted by J. J. Oliver of the Oliver Hatchery, Fresno, and George E. Zelhart of the San Joaquin Light & Power Corp.

It consists of a slab of concrete 10 x 2 ft. and 3 in. thick in which soil heating cable is placed. A standard thermostat is used to regulate temperature. Several vents are placed in the hood. Advantages claimed include uniform floor temperature throughout with no hot zones with consequent elimination of crowding and sweating; dry litter, improving sanitary conditions and heat storage in the concrete in case of power outage.

Operating experience shows an average consumption of one-half kilowatt-hour per chick for the brooding season.

●

• "Precooling Investigations With Decidious Fruits," bulletin No. 590 of the University of California, College of Agriculture, by F. W. Allen and L. R. McKinnon is available from the university to anyone interested in the problem of electric refrigeration for such precooling installations. The booklet is a comprehensive one of 142 pages and covers all aspects of precooling, outlines the experimental work so far carried on and the maintenance of cooling while fruit is in transit.

Better work, less employee fatigue and decreased overall packing costs are the dividends that can be expected from proper lighting in industrial plants. In this olive packing establishment, 45 foot-candles have been installed on the sorting belts.

Good Lighting Increases Packing Plant Efficiency

The Lindsay Ripe Olive Co. is another industrial organization putting good light to work to increase employee efficiency.

Modern scientific lighting provided by ten Holophane fixtures recently installed above the sorting belt in the canning plant proved so effective that sixteen fixtures of the same type are being added to the plant.

An even, glareless light is provided by the fixtures, which are especially designed for industrial lighting. Forty-five foot-candles of illumination are obtained, an ideal quantity for the prolonged visual effort required of the workers in sorting olives. Each lighting fixture is an enclosed unit with a reflector and a lens which bends the rays to furnish a path of light the exact width of the sorting belt.

This beneficial improvement was undertaken at the recommendation of Edison lighting engineers. Installation work was done by the Carroll Electric Shop of Lindsay.

A similar project is now under way at the Carpinteria Citrus Association packing plant at Carpinteria. Fixtures of the same type are being put in at this plant, with the exception that daylight blue lamps are being used.

● ●

Demonstrations Sell Soil Heating

To arouse interest in soil heating possibiliities arrange practical demonstrations. This constitutes the lesson learned by Pacific Gas and Electric Co. from its experience at the California State Fair. Here is the exhibit on the model farm which the company maintains on the fair grounds. A model cold frame and green house contained actual equipment, showing the method of installation, as well as growing plants. Many prospects were secured

Business Building Brainstorms + + +

[*What the Industry needs is a brainstorm to destroy the power surplus pest—Arthur Markwart, president, P.C.E.A.*]

Keep the Farmer Sold Through Frequent Surveys

38 Paradoxical as it may seem, to hold our present load is an important part of the job of increasing the use of electricity. One of the best ways of approaching both problems is to analyze customers' accounts to see if more efficient use can be made of both equipment and rates. Our competitors will do it if we don't, so why not beat them to it. Very often this means temporary reduction in revenue. It may also mean that the customer is being overcharged if this service is not performed. It does not require a clairvoyant to predict which will pay best in the long run.

Such work has been done to a certain degree in large industrial and commercial plants. The same should be done for the small fellow, and from the standpoint of public relations would pay the bigger dividend of the two. A former utility employee is now making good money in a certain territory by doing this very same thing. For this service he gets half of the amount saved. A double indictment against the utility, for the consumer has been overcharged in the past and has to pay this man half of the saving for the year to come. Public relations, not so good!

For agricultural irrigation there is a simple method of procedure which would do much to lessen the threat of competitive power. It is predicated on two facts: (1) the cost of pumping water varies directly with the lift and inversely with pump efficiency; (2) the amount of water per acre needed varies with the crop, and with the type of soil, whether light, medium or heavy. From the ledger accounts we get the horsepower, kilowatt-hours and bill. From the farmer we get the kind of crop and the acreage. From the irrigation specialists we get the amount of water required per crop per acre. Multiplying the following factors—the needed acre-feet per acre of the crop and soil in question x the upmber of acres x kilowatt-hours per foot of lift x actual lift in feet—would give the theoretical kilowatt-hour consumption. If the actual bill is much higher than the theoretical one, a number of things may be wrong. The motor may not be the proper size, the pump efficiency may be low, the wrong lubricant may be used, or the method of applying water may be wrong. There are other factors also, but those mentioned are probably the most important and by correcting those which are out of line there should be a favorable reaction from the farmer.

Portable demonstration outfits could be built showing by means of miniature pumps, reservoirs, soil plots, etc., just how the various factors work out in actual practice. One visual demonstration is worth a dozen printed explanations.—*C. H. E.*

•

Off-Peak Rates Would Encourage Electric Trucks

39 We should make every effort possible to stimulate an increased interest in the use of storage batteries in industries where, if possible, they may replace the gasoline propelled vehicle. Allow these accumulators to store up their energy during the off-peak hours such that their purposes may be two fold: (1) that of increasing the consumption of electricity; (2) that of straightening out our kilowatt demand curve.

Due to the inefficiency of such storage batteries, and their comparatively high first cost, I would suggest that an attractive off-peak rate be given to the consumer, such that his cost of operation if possible may offset the high initial cost of his investment as well as provide for the proper maintenance of such equipment. The advantages to be gained from the electric-driven vehicle over that of the gasoline engine in cleanliness and quietness of operation are well known to everyone. Certainly the electric-driven motor costs less for maintenance than the gasoline engine.—R. E. Braendlein.

•

Sell Electricity in Bargain Quantities

40 There is only one way to destroy the power surplus: Sell it to somebody who is willing to pay for it. This means we must have bigger electric bills, and the person who receives these bills must pay them and like it. How to do this:

(1) Instead of reducing the consumer's bill by allowing half off on the electricity consumed this year over the amount used during the same period last year, I would suggest making out every bill for the full amount of electricity consumed. Then enclose the company's check for the amount off. The check will represent tangible evidence of the money saved. The bigger the bill, the bigger the check. The check can be applied to the reduction of the bill, or it can be used for some other purpose. Either way, the consumer becomes accustomed to the bigger bills. When the half-off program comes to an end and the checks are discontinued, the consumer, having become accustomed to bills of a certain amount, is not likely to complain. And should a continuance of lower rates be warranted, he will be more apt to feel he can afford another electrical appliance for the same monthly bill.

(2) I would abolish the word "kilowatt" from domestic bills. How many housewives (or husbands, for that matter) ever studied Greek? "A kilowatt-hour for five cents" means, One for five cents. But "a thousand watt-hours for five cents"—that means a thousand for a nickel. That's QUANTITY. The industry has it for sale; the housewife is convinced she is receiving more for her money. Both will be better satisfied.—C. A. G.

•

Electric Water Heating In Every House

41 In applications of electricity we should constantly strive to find advantages and conveniences that cannot be duplicated by other means. In no field is this more true than in heat applications when competing with gas. Here is the way to add electric water heating to every gas served home.

The inconvenience of waiting a half-minute or so for the hot water to come after the valve has been opened is a small thing, but who has not been annoyed by it. A return pipe system may be installed but the first cost and the greater operating cost exclude it in most cases. A very small well insulated electric storage heater should be placed directly below every sink and lavatory, and connected in the hot water line. The pipe leading to the faucet should be quite small to hold as little cold water as possible, and practically instantaneous hot water would result. In such a location electricity would be the only practical heat. Two quart and one gallon sizes are suggested as being sufficient to supply small uses and larger amounts would be supplied by the regular system. One gallon of quite hot water mixed with cold, would even be

enough for a quick shower. This system would appeal to people as being economical to operate, eliminating waste, and very simple and convenient. It would appeal to the power companies as being a new load partly off peak, the demand of which can be kept down as the heaters would not need to be high wattage. The manufacturers have here a big opportunity and also a problem as the cost must be low if people are going to buy them.—V. E. L.

•

Commercial Lighting Customer Is Neglected

42 With concerted sales effort the electrical* industry is making noteworthy progress towards the elimination of an existing power surplus and is creating a market to absorb an additional surplus soon to be thrust upon it by Federal power projects. During this period, while all efforts is being concentrated on load building, there has been born to the industry a new problem child, which, being fed by an incentive to increase use of service, promises early maturity.

This problem child is identified as the existing commercial lighting customer who operates obsolete or inefficient equipment, much of which could economically be consigned to the scrap heap. This customer has gone merrily along with the rest, trying to keep up with the trend of the times, but being severly penalized for so doing on account of poor equipment. Because of this condition he is developing into nothing short of a menace. He complains of his high lighting bills to almost anyone who will lend an ear, and his scoldings have spoiled many an otherwise easy sale.

His mental attitude is not hard to understand when we realize that, during the stress of times, he has listened too long and often to Senator Whosis extol the theories and benefits of cheap electricity under government ownership. He gets out old light bills, notes the increase in costs, and with no thought whatever of efficiency in his own installation, checks and double-checks the remarks of the Senator, concluding that in his theory lies the only solution to the problem.

It may be that our industry will not, at this time, welcome the suggestion that some customers are using more energy than they should be, considering the benefits derived. Yet every town or city will produce its quota of these problem children of the industry. They are simply customers paying for energy wasted by inefficient lighting equipment, but the sad part of it is, they are sure to blame it on the rate rather than their equipment.

It takes no stretch of the imagination to determine the result of such a condition. Of course if the penalty is too great he has the alternative of reducing consumption. That doesn't prevent him from continuing to kick, however, nor does it accomplish anything towards eliminating a power surplus. Quite likely the kicks will become harder and more frequent, and in the end become infectious, others take up the cudgel, and uncontrolled the infection permeates the whole community.

When mortal man suffers from infection he calls in a good doctor and is willing to pay hard earned money for a cure. He has learned not to allow it to run. It is dangerous. It may cripple for life even if it should not prove fatal.

Infections are none the less serious in the case of the utility. But does the utility select a good doctor, does it pay him enough to expect a cure from his services, and are there enough of them available to cure the disease before it gets too wide spread?

These doctors are salesmen who, as a rule, are paid in proportion to the new load they produce. They may or may not want to take the time to diagnose the case of the problem child. Certainly the incentive is to let it alone since commissions and bonuses depend upon added load.

As a rule the sale of replacement equipment is harder to consumate than a new sale. Perhaps that is the reason that the average contractor-dealer doesn't go in for them much, even though they do promise a good merchandising profit. On the other hand the utility gains no new revenue in helping to reduce the customer's bill, although there is an important customer relation factor involved, and the utility may obtain substantial benefits from that angle.

To whom, therefore, is this problem child to go for advice? It is up to management to work the problem out. Perhaps a subsidy to the contractor dealer might be an inducement for him to spend a little more sales effort towards this problem.—*Jay Bee.*

•

Prizes aggregating $50 will be awarded for the best business building ideas to dispose of the industry's power surplus published in *Electrical West* during the six months, May to October, inclusive. Prizes will be awarded by the Northwest Electric Light & Power Assn. and its officers, together with the editor, will act as contest judges. Business-building merit, practicability of application and originality will be the basis of judging and the opinion of the judges will be final in awarding $25 for the best idea submitted, $15 for the next best and $10 for the third best.

In addition *Electrical West* will pay $2.50 for each idea considered worthy of publication by the editors. Suggestions preferably should be limited to 400 words or less, may be published under a nom de plume and should be sent to the editor.

Stronger Selling Brings Greater Use and Lower Rates

43 The so-called "power surplus pest" is the result of the present economic situation. While search for new uses of electricity, and the campaign advocating the more intensive use of our present "juice-eaters" are worthy activities, they will contribute but in a relatively small degree to eradication of the present reduction in power consumption.

The use of electricity in the home is primarily that of lighting. A group of other uses include radio, flatirons, and other appliances of small current consumption and of secondary load building importance because of irregular use. As a home load builder the use of electricity for cooking and heating offers the best possibilities.

We are all willing to admit that the electric range does the work of cooking with most of the good qualities of other available means and certainly with many of the objectionable features eliminated. But, the average home must consider the high first cost of electric cooking and the higher operating cost, and decide if the added convenience is worth the higher cost.

Does the solution of getting the masses to turn to a wider use of electricity not lie in being able to show them where their present costs of cooking, heating or power can be reduced by using electricity. To be able to show this it will first be necessary to adjust present power rates, eliminate the curse of the "stand-by" charge and urge the appliance manufacturers to keep the cost of their appliances to a minimum. The increased use of electricity that will follow will offset these reductions, sell the public on electrical service, increase appliance sales, and build up a sentiment to stop the development of federal, states and municipal projects which are the life instead of the death of the "power surplus pest."—B. K.

Engineering Symposium + + +

[A monthly forum in which engineers will present and discuss their problems, this department is dedicated to advancing the art of power generation, transmission, distribution and utilization]

Vertical Generator Shaft Trued Without Dismantling Unit

To Correct a Deflection in the Shaft of One of Its Generators Which Was Responsible for Excessive Bearing Maintenance, the San Joaquin Light & Power Corp. Operating Engineers Devised a Relatively Inexpensive Grinder Set-up to Grind the Shaft in Place, Thereby Effecting a Repair at Appreciable Savings

By F. R. HARP,
Supt., Kerchoff Power House,
San Joaquin Light and Power Corp.

A SERIOUS condition prevailed in the generator shaft of the No. 1 generator at the Kerchoff Power Plant, causing the removal and scraping each year of the lower guide bearing and a re-poured bearing approximately every other year. This maintenance was compulsory as there was a deflection in the shaft at this point of sufficient magnitude to compel an overall bearing clearance of .022 in. for operation of the unit, and the pounding that resulted was exceptionally severe.

The plant consists of three 15,000-hp. vertical type generators of the customary design, with the exception of the main shaft, which is considerably longer than most installations of this type. The main shaft is 19 ft. 6¼ in. long from the generator shaft coupling to the waterwheel. The generator shaft being 20 ft. 10 in. long from the upper point to the coupling, the combined length of shafting equals 40 ft. 4½ in., which makes it necessary to have the guide bearings well fitted to prevent an unstable condition.

The plant operates under a 350-ft. head at 360 r.p.m. The generators are excited from a separate vertical type turbine driven exciter, there being two identical installations, both operated in parallel during the summer heavy load periods; afterward one is of sufficient capacity to handle the plant.

The generator bearings are of the conventional type consisting of the following: One 29-in. Kingsbury thrust bearing, operating in a constant oil bath cooled by circulating water through copper coils surrounding the bearing. One upper guide bearing 22-in. x 14-in. composed of three sections fitted in a tapered housing. One lower guide bearing 22-in. x 15-in., composed of two sections, the base of which is bolted to the lower section of the spider; the housing into which it is installed has six adjusting screws for bearing alignment. Above the water wheel there is a 42½- x 16¼-in. lignum vitae bearing designed in two sections, which when bolted together fit into a tapered set of bronze rings, lubricated with water from the scroll case.

Before attempting any work on the generator shaft, the old lignum vitae bearing was removed and the spare installed in its place, creating a good alignment at the base of the main shaft. The next procedure was to remove the upper guide bearing and replace it with an exceptionally tight fitting bearing. In fact, this bearing was installed allowing only an overall clearance of approximately .004-in. due to the fact that the more rigid the generator shaft could be held the better the chances would be to complete a true grinding of the shaft below the rotor. This bearing was to be removed and scraped to a final clearance later on.

The inside of the lower guide bearing housing has only a 7¾-in. clearance from the generator shaft when the bearing is removed. It was in this small space that a grinding attachment had to be designed to fit and operate with accuracy. Fig. 1 gives a sectional view showing method of attachment to spider base.

Fig. 2 shows a view through the center line of the generator shaft with the attachment in place. At the lower end of the feed screw, instead of installing miter gears to operate the feed screw at right angles, the reduction gear box (not shown here) was connected directly to the feed screw in a vertical position. The idea was to duplicate a lathe bed and carriage and operate it in a vertical position, revolve the shaft with water on the turbine at a speed best suited for the work to be accomplished.

A 4-in. x 6-in. x ¾-in. angle iron was used as a base, the 6-in. web being utilized for the support of the lathe ways. A section of one-inch thick boiler plate was welded to the inside of the base 10 1/16-in. from the lower end. This plate was drilled with three 21/32-in. holes and when ready for installation was clamped to the lower section of the spider and drilled and tapped into the spider base for ¾-in. cap screws, in addition to which were added two ⅜-in. taper dowels. A bracket was made to hold the top of the attachment to the upper portion of the bearing housing, thereby obtaining an extremely rigid set-up that would not vibrate or give when the grinder carriage was in operation.

The point of deflection of the shaft was located by revolving the unit slowly and using an indicator, marking the high side. The unit was then brought to rest with this high spot, and its corresponding opposite low side, at right angles to the center line of the grinding attachment.

In a job of this kind one is compelled to decide upon some arbitrary point of accuracy to use to line up his installation, and it was decided that a point at right angles to the point of deflection would be a true alignment of the shaft. The attachment was then aligned from this point so that when the carriage, carrying an indicator, traveled an overall vertical distance parallel to the shaft of 24 in., a maximum deflection of only .0005-in. was obtained. This was considered sufficiently accurate for the work contemplated. The final results proved that this method of reasoning was correct.

A ¼-h.p., 1,750 r.p.m. split-phase motor was used to operate the vertical feed screw. As 8 r.p.m. was the maximum speed the vertical feed was desired to operate, a simple gear reduction attachment was made and attached to the feed screw. A reversing switch was made for the motor to reverse the carriage at the end of each travel.

A specially ground lathe tool was inserted in the tool post of the cross slide and six light cuts were taken off the shaft. One hard spot was encountered near the center of the bearing location that the lathe tool could not get under due to the lightness of the cut that had to be taken. This spot was left for the grinder to take care of later. After sufficient metal was removed with the cutting tool, the grinder was set up on the same cross slide and grinding of the shaft continued until the pre-determined size was obtained.

The shaft at this point originally was 14.992-in. diameter and it was decided that .020-in. had to be removed to arrive at a true alignment at this place of operation of the lower guide bearing.

In the meantime a polisher had been made in two sections, hinged at the back with an adjustable clamping bolt on the front to vary its internal diameter. Two brackets were fastened to this polisher on opposite sides with right-angled sleeves 4-in. long and with an internal diameter to allow sliding freely over a 1¼-in. pipe. Two pieces of 1¼-in. pipe with flat bases welded to one end were then bolted to the bottom of the spider base. Two holes were drilled on opposite sides of the polisher into which two handles made of ½-in. round iron with a hand grip on the lower end were attached. Two men on opposite sides operated the polisher through the hand grips up and down the shaft, the unit revolving approximately 100 r.p.m. until all marks of the tool and grinder had been removed.

Careful measurements were then taken with a set of new micrometer calipers and the maximum variation over the 24-in. of the shaft that was ground was found to be only .00025-in. This variation was where the hard spot was encountered and was that much oversize.

During the cutting operation the shaft was revolved at approximately 30 r.p.m. and during the grinding operation at 100 r.p.m. It required four eight-hour days with two machinists and one helper to complete the actual cutting, grinding and polishing of this part of the shaft. The helper stayed at the governor and held speed steady at the required r.p.m.

The lubricating of the upper and lower guide bearings during normal operation is from an oil sump under and a part of the lower guide assembly. A two-piece gear is installed in a recessed portion of the main shaft and meshes with a gear driven type oil pump.

This pump delivers oil to a 1½-gal. capacity gravity tank, located on the outside of the thrust-bearing housing just above the upper guide bearing, which in turn delivers oil to the upper guide and from there flows downward through two 1¼-in. pipes threaded into the upper guide bearing oil pan, and revolving with the shaft, to the top of the lower guide bearing. The oil flow in the gravity tank is controlled by a small needle valve and a locknut on the stem.

This Paper supplements the Northwest Electric Light and Power Association reports in that it describes another method of vertical alternator repairs in the field. The author contributed this data as additional material to the paper by J. H. Siegfried entitled "Repairing and Maintaining a 6,000 Kw. Water-Driven Generator" published in the April, 1935, issue of ELECTRICAL WEST.

During the work on the shaft the entire lower guide bearing assembly had to be dismantled, including the oiling system. The method of lubricating the upper guide bearing, during this work, was to remove the two 1¼-in. pipes from the upper guide bearing oil pan, insert two pipe plugs, and then fill the gravity tank and cut down the oil flow to a minimum. The upper guide bearing oil pan has a capacity of 4½ gal. and that was emptied through draining off each night by the oiler on shift.

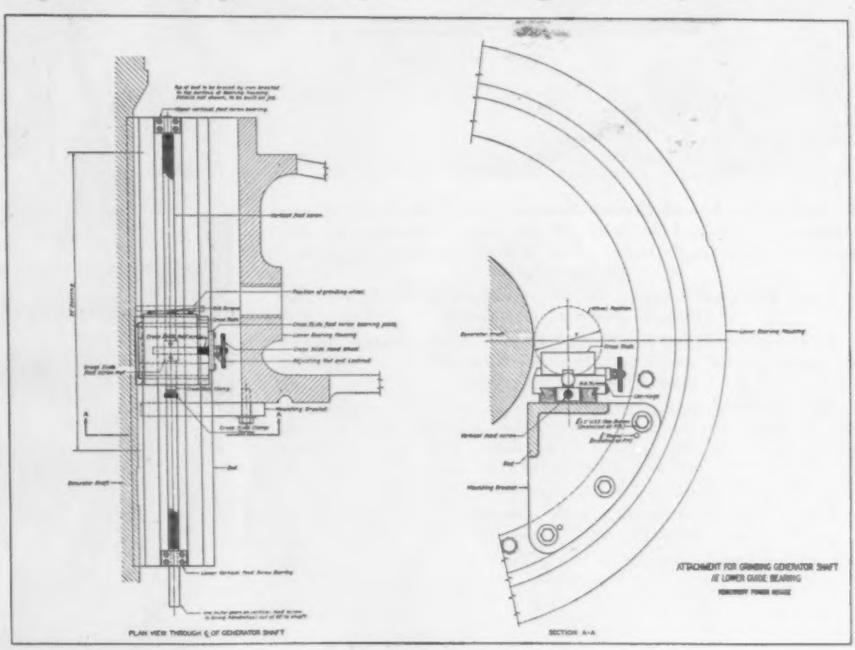
After the shaft work was completed the bearing was assembled and fitted for an overall clearance of .008 in. against a former clearance of .020 in. The upper guide bearing was removed and scraped to a final clearance, assembled, and the generator started revolving. Three days were consumed in bringing the generator to full speed of 360 r.p.m., the speed being gradually increased each day. The generator was then paralleled and picked up to full load with no signs of distress showing at any time. The shaft runs perfectly true at the lower guide bearing and all pounding that was so severe in the past has entirely disappeared.

No unforseen difficulties were encountered, the work progressing very smoothly along the original plans. The plant machine shop only consists of one 18-in., 10-ft. lathe, one small drill press and one power hacksaw. Outside of machining the lathe ways and the angle iron base in the Fresno shop, the balance of the attachment was made up at the plant.

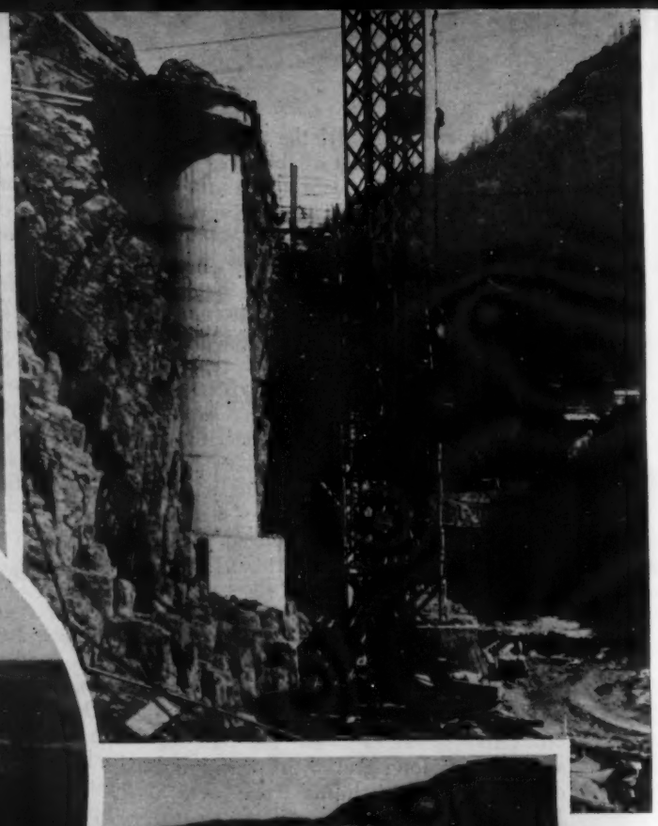
The total cost of this job was slightly less than $1,000, including material, labor and all miscellaneous items. The portable grinder was the most expensive piece of material purchased, and is now available for many other different types of grinding, as is the special grinding attachment, gear reduction box and polisher.

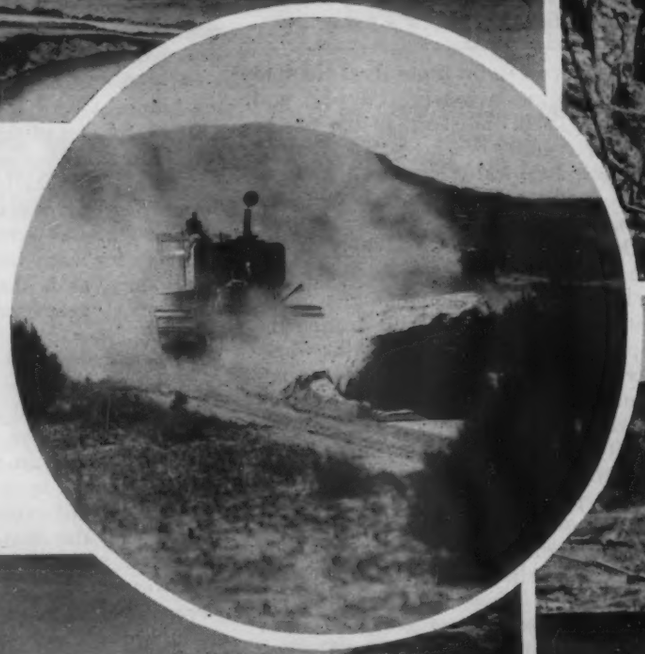
The estimated cost of truing up the shaft by dismantling and shipping to San Francisco would have been close to $2,500 providing no major difficulties were encountered in removing and replacing the shaft in the rotor. Likewise the outage of the generator would be of much longer duration. In the author's mind, the expenditure on the present work was a very good investment as the average annual maintenance on this machine due to its previous condition had been approximately $250.

Fig. 1 (left)—Vertical cross section through the grinding device. Fig. 2 (right)—Plan view showing mounting base clamped to general stator frame.



Power for the North-west





• *Top, left—Grand Coulee damsite, with the flow of the Columbia confined to half of the river channel by the world's largest cofferdam. The gravel conveyor is in the background*

• *Top, right—Entrance to the navigation lock on the Oregon shore at Bonneville*

• *Center—Stripping at Grand Coulee preparatory to developing gravel beds for the production of 13 million cubic yards of aggregate*

• *Above—Infra-red photograph of Grand Coulee damsite which shows in the background the contour of the one-time channel of the mighty Columbia. The present channel and damsite are below*

• *Above, right—Behind the cofferdam work is being rushed on the excavation for the Grand Coulee dam. Half the river bed is unwatered*

• *Right—Aerial view of Bonneville showing the progress on the power house section of the dam and the navigation lock. The cofferdam in the main channel is flooded in this picture*

—Cut courtesy of Shell Oil Co.

Modern Equipment Aids Location of Radio Interference

By O. W. HURD,
Radio Interference Engineer,
Northwestern Electric Co.

WHEN the Northwestern Electric Co. found the radio set used for interference location becoming inadequate, it was decided to adapt a modern automobile radio for this work. Experience with previous trouble sets demonstrated that to be of the greatest help in locating radio interference a set should possess the following qualifications:

1. A directional antenna or loop controlled entirely from within the car.
2. Sufficient sensitivity.
3. Tune over wide range of frequencies.
4. Freedom from set and car noises.
5. Output indicator.
6. Convenient means of checking operation of set.

These points were kept in mind in the selection of an automobile radio and in the design and construction of the control unit and antenna system. The manner in which these things were accomplished will be described in the order named.

It was found by experiment that in order to secure highly directional effect in the loop it was necessary to couple the antenna to the receiver by means of a shielded radio frequency transmission line. The antenna coil of the receiver was disconnected from ground, and the shielded pair connected to it. The shielded transmission line was connected to the center two turns of the loop; in so connecting it very little loss occurs in the link between antenna and set. The proper point to connect the transmission line to the loop was found by using an oscillator and connecting to different turns until a maximum output was obtained. To further increase the efficiency of the loop a variable condenser was connected across the ends of the loop. By tuning the antenna system to the frequency to which the set was tuned, a very great gain was made in the strength of the signal. This condenser was mounted in a weatherproof container on top of the car with the shaft extended through the top and controlled from within the car. This feature was added since the accompanying photographs were taken and therefore does not show.

A novel and extremely convenient feature of the loop assembly is that it may easily and quickly be raised or lowered from within the care or rotated in any direction when raised. Just how this is accomplished can be seen in the photographs. The handle used for raising the loop is also used for rotating it. The coil spring is to provide enough friction so that neither wind pressure on the loop nor vibration of the car will cause the loop to change position. The index pointer over the spring is to set the loop at the proper angle so that when lowered it will lay in the brackets provided for it on top of the car.

It was found that most modern six tube automobile radios had the necessary sensitivity also sufficient output to obtain satisfactory indication on the output meter. However the sensitivity required in a trouble set today is much greater than was necessary a few years ago. At the present time the selection of a set which would adequately cover a wide range of frequencies is limited as not many manufacturers have brought out sets covering frequencies other than the broadcast band. The one chosen tunes over a range of 550 to 4,000 kilocycles. The ability to cover the higher frequencies has proven very useful in locating certain cases of interfreence, particularly interference on the police call frequencies.

By carefully shielding all car wiring, wiring of the control unit and receiver, shielded coupling between set and loop has further reduced trouble from this source. When the modern automobile receiver is tuned to extremely weak signals, noise from the vibrator and rectifier become objectionable and add to the reading on the output meter. This objection is overcome by the use of "B" batteries. By means of a three pole double throw switch on the control unit the vibrator and rectifier tube is taken from the circuit and a 200-volt "B" battery replaces the "B" supply of the power pack. This feature is found to be very desirable, but for most cases of trouble the power pack supply is found to be satisfactory. By using the "B" batteries only for check purposes and on weak signals the life of the batteries is their shelf life. The batteries are carried in a compartment in the rear of the car.

In order to obtain the proper variation in output due to changing signal strength it was necessary to do away with the automatic volume control of the receiver so desirable in listening to broadcast. It was not found practical to have this feature optional as it involved too many changes in receiver wiring. The output indicator which has proven satisfactory consists of a milliammeter having a full scale deflection of 1½ milliamperes and a copper oxide rectifier to change the a.c. from the output transformer to direct current. A potentiometer is connected in this circuit to control the reading of the meter so that it can be used on a wide range of output intensities.

Means for making easy check on the condition of the receiver is provided by

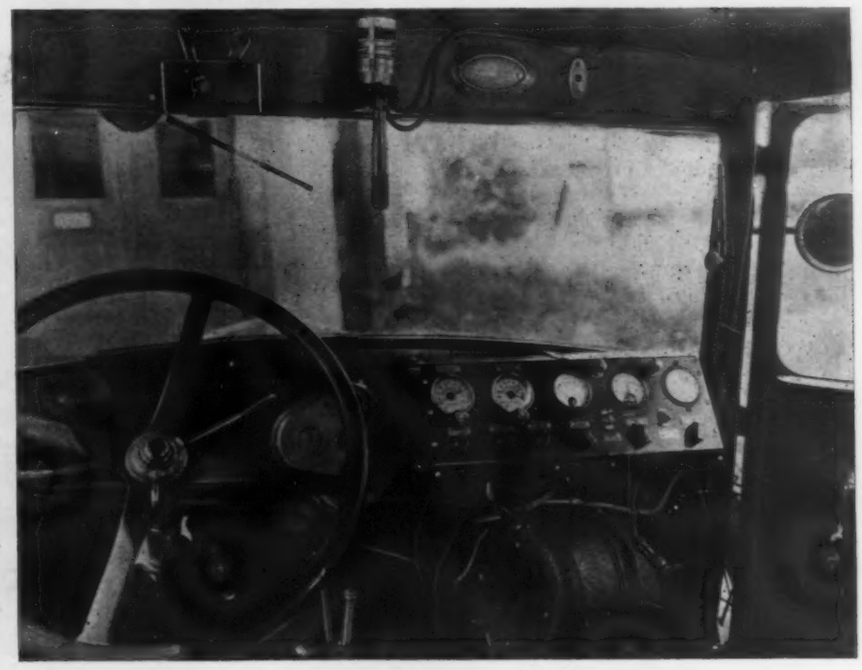


Fig. 1—Interior of the trouble car showing the location and relative size of the control unit and receiver. Note the details of the loop mounting installation. With the handle as shown the loop is down.

Fig. 2—Directional loop shown in the lowered and raised position. When lowered and locked into position, it is not likely to be damaged. Note room for passenger is provided in the car.

the use of meters mounted in the control unit. One is an ammeter measuring the current used by the set. The other is a voltmeter which may be used to check the filament and plate voltages. Any trouble developing in the set will cause some change in the indication of these meters.

The photograph of the control unit shows the means by which it is readily connected to the receiver, two multiconductor plugs being used. The control on the extreme left is the tuning dial. Below it is the "off and on" switch. The next dial is the volume control. A duplicate of the tuning dial was used for this purpose, so that it would be possible to repeat settings of the volume control which cannot be done accurately with the usual type of control provided in most automobile receivers. Incidentally it was necessary to cut new gears for this dial to secure the necessary 270 deg. deflection for the full range of the volume control. Below the tuning dial are switches by the use of which either a dynamic or magnetic speaker or both may be used. The dynamic speaker is mounted in the set proper, and the magnetic in the rear of the car, the object of the arrangement being that the speaker responding best to the type of interference listened to may be used. Below the output milliammeter is the potentiometer controlling its reading. The "off" and "on" switch to the right connects the voltmeter in the circuit. Below the ammeter is the range switch for the voltmeter. Between the ammeter and voltmeter is the switch for the panel lights. The switch on the extreme right is the changeover switch from battery to power pack "B" supply.

Either the control unit or receiver may be easily removed for servicing without disturbing the other, the interconnection being entirely accomplished by plugs. These two units are built and mounted in the car to withstand the shocks and vibration which is experienced in the operation of the car over all types of roads. Although the equipment has been in use only a short time all the features described have proven their worth and make the task of locating interference by this type of equipment much easier than has been the case with previous sets.

●

Million-Volt Impulse Generator Built at Cal Tech

A million-volt impulse generator has recently been constructed in the high voltage laboratory at the California Institute of Technology for the generation of high surge voltages. Twenty 50,000-volt condensers are mounted on the insulating wood framework shown in the photograph. The condensers in ten banks of two, are charged in parallel at 100,000 volts from a transformer-kenotron supply on the balcony. When fully charged, the condensers are connected in series by a switching sphere circuit and discharged to ground through a circuit containing resistance and inductance. One million volts and several thousand amperes are obtained at discharge for the duration of a few hundred micro-seconds.

The generator is particularly useful for laboratory research on the destructive effects of natural lightning, and for studies and tests of apparatus to protect the equipment connected to transmission lines from surge over-voltage. A series of tests are now being made, using the impulse generator, on the 138,000 volt circuit breakers built by the Kelman Electric & Mfg. Co. for the Boulder Dam transmission line.

The 1,000,000-volt impulse generator recently installed at the California Institute of Technology

Letters...

Some New Names For the Convenience Outlet

To The Editor:

Sir—In answer to the request of the "Suffering Copy Writer" I am submitting the word "conlet" which is simply the first syllable of "convenience" and the last syllable of "outlet."

It is my opinion that this word will be readily accepted by the electrical industry and since the general public does not know what to call it, let's submit it to them in the form of advertising the article under a new name.

PAUL C. BROWN,
Powerhouse Operator.
Southern California Edison Co.,
Big Creek, Calif.

●

To The Editor:

Sir—Your August issue of ELECTRICAL WEST just received. See where "Suffering Copy Writer" is asking for a new name for convenience outlet.

Okay. Why not call it the "Electro-let?" Simple and easy and at least not much worse than convenience outlet.

WM. BENNINGTON,
Superintendent.
Southern Sierras Power Co.,
Calexico, Calif.

●

To The Editor:

Sir—In order that the copywriter suffering from overwork due to the word "convenience outlet" may have some peace of mind in knowing you are attempting to find a new name, I submit "Connectto."

A. F. BLECKSMITH.
Duncan Electric Mfg. Co.,
Los Angeles, Calif.

●

To The Editor:

Sir—I note letter to you by "Suffering Copy Writer" for a better name for convenience outlet.

I am thoroughly in sympathy with him, and I suggest that it be called "Receptacle Plug-in."

Please send the prize at once.

C. L. FREEMAN.
Willapa Electric Co.
Raymond, Wash.

●

To The Editor:

Sir—Convenience outlet? Why not call it an "Electrical Tap?" It has always seemed to me that they were taps in the walls from which one could draw electricity for any purpose whatsoever.

Or it could be called "Service Tap," "Service Outlet" or "Appliance Inlet."

MISS C. A. GIANOTTI.
San Francisco, Calif.

P. S. Many housewives look upon the convenience outlet as an "invisible servant."

●

Realm of Science Is a Worthwhile Addition

To The Editor:

Sir— . . . I should like to take this opportunity to compliment you on the success of your "Realm of Science" section in the ELECTRICAL WEST. I think it has been a worthwhile addition and I can assure you that, if you are continuing the pages through the next year, we will again be glad to make our contribution.

WARD B. KINDIG,
Acting Executive Head.
Department of Electrical Engineering,
Stanford University, California.

In the Realm of Science + + +

[Devoted to the research and scientific developments which affect the electrical industry and which are being carried on in the engineering departments of Western universities. Edited this month by R. W. Sorensen, Prof. of Electrical Engineering,, California Institute of Technology]

Precision Measurement of High Voltages

By DR. J. E. HOBSON,
Department of Electrical Engineering,
California Institute of Technology.

THE design of insulation, and the coordination of solid, liquid and gaseous insulating materials to protect the equipment associated with higher voltage transmission lines, require an accurate method for the measurement of high voltages. The needle and sphere spark gaps have been in general use for the measurement of potential differences in excess of thirty thousand. However, the erratic performance, polarity effects and inadequate calibrations have made the use of spark gap meters inaccurate for precision measurements. Furthermore, there has been a wide variation in the test results obtained with the needle gap and sphere gap in different laboratories.

The sparkless sphere gap voltmeter developed at the California Institute of Technology during the past year does not have many of the disadvantages associated with the use of spark gap meters, since the inconsistent and little-known phenomena of the electrical breakdown of air form no part in the operation of the voltmeter. The familiar sphere gap is used as a Kelvin electrostatic force meter, the force of attraction acting on the spheres when a difference of potential is maintained across the gap being used as an indication of the voltage.

The force acting on either sphere forming the sphere gap when one sphere is maintained at a higher potential than the other may be accurately calculated as a simple function of the sphere size, gap spacing, the potential difference between the two spheres and the dielectric constant of the surrounding medium. Conversely, if the force acting on one sphere is known, the potential difference may be calculated. The mathematical development of the relation between force and voltage from fundamental laws of the electrostatic field may be found in an article appearing in the June, 1935, issue of *Electrical Engineering*, "The Sparkless Sphere Gap Voltmeter," by Professor R. W. Sorensen, Simon Ramo, and the author of this article. The relation is expressed by the equation:

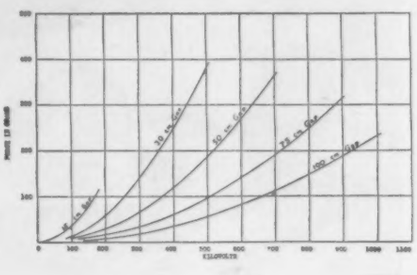
$$V = 9405\sqrt{F/S}$$

where V is the potential difference across the gap in volts, F is the force of attraction in grams, and S is a calculated gap spacing factor depending on the sphere size and gap spacing.

Since no empirical data are necessary in the force-voltage relation, a measurement of force on one sphere gives an absolute indication of the voltage difference between the two spheres. No calibration curve is required, consequently, and the method is an absolute, or primary, standard for the meaurement of potential differences. Variations in air temperature, pressure, and humidity do not affect the operation of the meter in any way, and need not be known.

It is, of course, necessary that the spheres be separated by such a distance that sparkover will not occur between them for the applied potential difference while the force is being measured. Since, in general, the force increases with a decrease of gap spacing, it is of advantage to maintain the gap as short as spark-over will permit. The curves of Fig. 1 illustrate the variation of force with voltage for constant gap spacings of the 100 cm. sphere gap.

Fig. 1—Variations of force with voltage for constant spacings of the 100 cm. sphere gap



Apparatus now used in the laboratory for the accurate measurement of potential differences ranging from 60,000 to 1,000,000 volts consists of two cast aluminum spheres, one meter in diameter. The right hand sphere of Fig. 2 is supported at the end of a horizontal iron shank carried in an insulating framework suspended rigidly from the laboratory roof. The shank is free to slide horizontally a distance of 150 cm. through wooden bearings, the movement being controlled by a screw system driven by means of a long insulating belt from a motor on the floor. The left hand sphere is likewise fastened to the end of an iron shank 20 ft. long. This shank is supported from the laboratory roof by two pairs of ropes, a pair arranged in a "V" formation from one end of the shank, the apex of the "V" being fastened to the shank and the two branches diverging upward to the roof structure. The sphere assembly is thus free to move in a horizontal direction coaxial with the shank of the insulated sphere, but is rigidly held from any lateral motion. The shank is grounded through flexible connections. Any motion of the grounded sphere assembly is observed through a telescope focused on an illuminated hair line carried by the shank of the grounded sphere. A light cord fastened to the end of the shank passes over a ball-bearing bicycle wheel to a weighing pan, to which weights may be added to balance the force acting to attract the grounded sphere toward the insulated sphere when voltage is applied to the latter. The apparatus is so sensitive that the movement resulting from a weight of ½ gram or less on the weight-pan may be easily detected. Since the forces acting between the spheres over the range of voltages to be measured with the meter vary from 100 to 400 grams, the error of force measurement is very small. The inherent damping of the supporting ropes prevents undue "pendulum" oscillation.

After the gap spacing has been adjusted to a distance just greater than that for which sparkover would occur, the voltage to be measured is applied to the insulated sphere. Weights are placed on the pan until the cross hair in the field of vision of the telescope has returned to the position it had before voltage was applied to the gap. The weight

on the pan exactly balances the force acting on the grounded sphere. With this force measured, and the gap spacing known, the voltage is easily calculated.

In order to compare a voltage thus determined from force measurement with a measurement of the same voltage using the gap as the usual spark meter, voltage is applied to the insulated sphere through a water rheostate from the million-volt transformer bank in the laboratory. The voltage is held constant by observing a meter in the tertiary volt-coil, after the measurement of force is made, while the gap distance is decreased until sparkover occurs by moving the insulated sphere. The voltage obtained from Peek's calibration curve corresponding to the sparkover distance may then be directly compared to that calculated from the force measurement. The results of numerous comparison measurements have shown that the standard calibration curve for the 100 cm. spark gap is considerably in error, particularly for voltages greater than 500,000. Such measurements have demonstrated the value of the sparkless sphere gap voltmeter as a calibrating instrument.

The advantages which are attained with the sparkless sphere gap voltmeter as a precision instrument of high voltage measurement may be briefly summarized as follows:

1. The force-voltage relationship may be analytically derived from known electrostatic laws, and consequently the method provides an absolute primary standard of high voltage measurement. This feature makes the meter particularly useful as a calibrating instrument.

2. The operation of the meter is not dependent on air temperature, humidity, or pressure; nor are any empirical data required for a calibration.

3. The measuring apparatus has been found to be of such sensitivity that the experimental error is always less than one-half of one per cent.

4. There is complete freedom from the erratic readings attendant with the use of the spark gap meter.

5. Since the force depends on the square of the applied voltage, the measurements are always in terms of the effective, or root-mean-square, value of the applied voltage wave.

6. The meter may be used for measuring either direct or alternating voltages of any commercial frequency with no change in the force-voltage relation.

7. The sparkless gap permits continuous voltage application without the necessity for an opening of the test circuit at the time of measurement, and is therefore superior to the spark gap for routine test measurements.

8. The spheres do not have to be

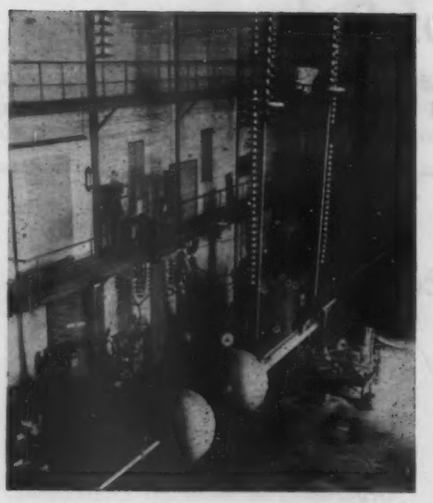


Fig. 2—A view of the sparkless sphere gap mounting. The right hand sphere is insulated from ground; the left hand one grounded. One pair of the "V" suspension ropes may be seen fastened to the grounded sphere

smooth or polished as for the spark gap, and they are not required to withstand electrical discharge.

9. A resistance in series with the gap to limit current flow is not necessary.

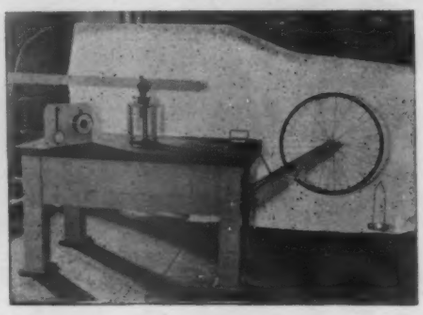
10. Polarity and time-lag effects are entirely absent.

11. The effects of field distortion due to adjacent walls, floors, and other grounded objects may be accurately calculated.

12. The voltage measurement may be easily and quickly made, and readings may be duplicated with no difficulty.

The method may be used for any desired range of voltage measurement, the only requirement being that the size of spheres and spacings used be such as to give forces that may be readily measured. With some modifications in the mounting, the instrument is equally suitable for a laboratory primary standard or for a more compact and portable secondary standard for general use. One, or preferably two, very carefully constructed standard meters could be used to calibrate the more portable meters for routine measurement.

Fig. 3—View of the weighing table and force measuring apparatus connected with the grounded shank



New Drafting Standards Set by A.S.A. Dictionary

Thirty national organizations and a number of independent experts have developed a graphical "dictionary" of drawings. The work has been adopted by the American Standards Association and will be used as the guide in thousands of drafting rooms.

Heretofore, according to Dean Franklin DeR. Furman, Stevens Institute of Technology, who was chairman of the American Standards Association's committee, a lack of uniformity in symbols and other practice existed. As a result, drawings made by one company were not intelligible to other concerns which needed to use them. Adding to the confusion was the fact that most of the larger drafting rooms devised their own standard practices, and graphical symbols in unnecesary variety have been developed. This new standard seeks to eliminate this confusion, he said. Instructors in schools and colleges have been at a loss to know what practice to teach in their mechanical drawing and machine shop classes, because of this confusion.

Early in the work of the committee, questionnaires were sent to 900 organizations interested in mechanical drawings asking for details as to their individual practice. These answers were codified and were used as the basis of the first draft of the standard. The work was divided into six important phases of drawing, namely:

Specifications for Paper and Cloth; Methods of Indicating Dimensions; Lettering; Drawing Layout; Line Work; and Graphical Symbols for Drawings.

The Society for Promotion of Engineering Education and the American Society of Mechanical Engineers took the leadership in the work.

•

• HAY FEVER sufferers are given the first hope for relief in a study being made at the University of California by B. M. Woods, chairman, and B. F. Raber, professor of the department of mechanical engineering. The answer to the problem is the complete conditioning of the air in the home or work shop of persons who suffer from this affliction. A number of hospitals equipped with wards to care for hay fever cases have reported excellent results from the filtering of the air and thus removing from it the pollen and peculiar types of dust which have been found to cause the irritation to the mucous membrane of persons sensitive to certain of these stimuli. In its report it was stated that in 1919 it was estimated there were 5,000,000 workers in the United States whose health was jeopardized by dusts alone. This indicates a market awaiting development.

With the Trade Associations + + +

[An Exchange of Plans and Ideas for Assisting the Industry in All Branches to Solve Some of Its Problems of Trade Relations and Business Ethics]

Fourteen Years Work

By S. G. HEPLER
Vice-president, Electric Club of Washington

FOURTEEN years of work on the part of the electrical industry in the state of Washington has finally brought fruit. After this period of years the governor of the state affixed his signature to House Bill 413, on March 21, 1935, and a state wiring code was made into law. It will begin to become effective on January 1, 1936. The bill contains these three major features:

(1) Adoption of the National Electrical Code as a minimum standard for all electrical installation, with several minor exceptions.

(2) Providing for a $50.00 license fee for all electrical contractors.

(3) Establishing within the Department of Labor and Industries of the State of Washington of an enforcement department.

Among the several minor features is the flexible clause which provides that the Department of Labor and Industries shall procure and file in its office on January 1st, of each succeeding year the latest approved National Electric Code rules.

This provision automatically provides for the legalizing of the progressive code requirements. Provisions are made for cities to adopt higher and/or better standards if so desired. A bond in the amount of $1000.00 is provided to insure compliance with the code, also, as a guarantee for the payments of labor and material.

Funds required for the department are restricted to the amount accruing from the license fees. This condition will tend to lower the effectiveness of the department for possibly two years.

Washington has always been the dumping ground for sub-standard, unapproved and foreign made materials. The law does not directly prevent a repetition of the *dumping*. It does, however, prevent the use of such material by contractors. This provision will make the market less attractive for those who profit by undermining existing business channels through the introduction and sale of sub-standard or foreign goods. From a contractors point of view a standard has been established which will tend to stabilize all his efforts.

Fourteen years is a long long time in which to accomplish an objective. Similar bills have been before the last six or seven sessions. These various bills have invariably passed one or both houses, only to die in some rules committee on account of congested legislation.

Legitimate manufactures, manufacturer's agents, distributors and jobbers through this beneficial legislation will be relieved the economic pressure always resulting from *dumping* conditions.

The utilities' benefits will be derived mainly through safer installations which reduce the possibilities of damage suits arising through faulty and/or substandard materials or workmanship.

Contractors will benefit through standardization of the major factors that enter into his bid or quotation.

Labor benefits through the stabilization of standards under which the work is installed.

The consumer reaps by far the greatest return of all, through the use of approved materials installed in a safe manner under standards that retard at least the haphazard installation methods of the past. This should reduce the personal accident hazard, the fire hazard, and particularly reduce the expensive shutdown and trouble hazard that always exists with poor workmanship and materials.

Washington state anticipates more and greater electrical installations on the farms, dairies, chicken ranches, homes, offices, stores, mercantile establishments and industrial plants.

It is the imperative duty of the entire industry to convert this anticipation into an actuality. The adoption of the National Electric Code will tend to adjust two very detrimental elements now prevalent, namely, the chaos created by the lack of definite information as to what constitutes a reasonably safe installation method; and the proper and appropriate use of various materials.

Northern California Contractors to Convene

Soon after the return of Lloyd Flatland, its president and a member of the executive committee of the National Electrical Contractors Assn. from the national convention in Chicago, Sept. 23-25, the Northern California Chapter, N.E.C.A., will hold a convention and boat ride to Sacramento, it was decided at a meeting of the executive committee of the chapter, held Aug. 2, 1935, in San Francisco headquarters. The convention will probably be held early in October, according to present plans.

The matter of national dues, which had been held up due to misunderstanding in the matter of method of payment, was straightened out. Dues from old members were acceptable upon the former quarterly payment basis, it was learned, although the national association still insists on payment of the full $15 in advance for new members. Mr. Flatland was also named delegate to the convention from the chapter.

Charles A. Langlais was endorsed as a candidate for a place on the new contractors license board of the state of California to represent the sub-contractors.

•

• Francis O. Sievers, of Kuchel-Sievers Electric Works, San Francisco, and member of the national motor section of the National Electrical Contractors Assn., was asked to prepare a paper, "The Effect of Manufacturers' New Motor Sales Policies on the Dealer's Pocketbook," to be read to the convention. He was to be assisted in the preparation of the paper by members of the San Francisco and Oakland motor dealers association. Full details of the convention program will be found in the September issue of Electrical Contracting magazine.

•

• Los Angeles Electrical Contractors and Dealers Assn., after a ballot of its members, decided to establish its own office and headquarters rather than continue to function through the facilities of the Biddle Trade Bureau. Location of the new office and details of the proposed reorganization had not been completed at press time.

EDITORIAL + + +

Economics and Rural Electrification

AS far as the Far West is concerned, the New Deal $100,000,000 program to electrify the farms of America causes little concern. With pardonable pride, it might be suggested that Western achievements in farm electrification might be used as a "yardstick" for the remainder of the country. However, here as elsewhere, except in Washington, D. C., economics rule, and the economics of farm electrification must be investigated from two angles if electric service is to be extended to those Western farms still beyond the reach of distribution lines.

The first of these is to find ways and means of persuading the new farm customer to use sufficiently large amounts of energy to yield a return on the investment necessary to serve him. While the farmer's potential consumption of energy may be large, his cash may be short and his adoption of greater usage of electric energy will only come when he can be shown that investing money in energy-consuming equipment will save more money in other ways. This obvious truism has been recognized sucessfully in much of the research conducted by the various Western Committees on the Relation of Electricity to Agriculture.

The second way to increase the already large number of electrified farms in this territory is to decrease the cost of the investment necessary to serve the remaining isolated farms, and this is receiving increasing attention by both utilities and manufacturers. This method, however, is subject to very definite restrictions set up legislative or regulatory bodies in the various states. Often permissive construction standards for rural operations are essentially the same as those for urban or suburban—needlessly so in the opinion of many, as the exposure to hazard from mechanical or electrical failures is far lower in farming areas.

Utilities should be permitted to build new rural extensions, not in accordance with arbitrary standards, but in accordance with the requirements of reasonable safety, reliability and service for the territory served. Because a pole does not have a specified taper or because a connector has not been approved for Class "A" construction, is no reason why they might not render safe and satisfactory service on an extension across grazing land or cultivated fields.

In this territory the utilities are reaching the point of marginal return in many rural areas and the best way to bring service to new farm customers is to find ways and means of lowering the investment necessary to provide that service. This cannot be done unless construction standards are modified to more nearly conform to the dictates of the economics of serving these marginal farms. Perhaps permission might be granted to utilities to make experimental installations of various types. Perhaps a review of present standards will reveal places where new devices can be approved for rural line construction. In any event, consideration of this problem promises earlier realization of a completely electrified West.

Abundant Light—Abundant Life

IF IT is true, and it is, that 85 per cent of our perception or absorption of knowledge and impressions come to us through the sense of sight, then seeing is just now coming into some appreciation of the help that should be accorded it by means of controlled light. It has been a long delayed appreciation, too long for the good of tired eyes which were asked to carry more than their share of the burden.

This, basically, is the reason for the sudden and accelerating growth of acceptance for improved lighting. Oldsters in the industry will recall years of effort devoted to the fostering of this plain truth. They may wonder why suddenly a public which was indifferent to their admonitions for better lighting has suddenly become conscious of its need for better light.

Various analysts will ascribe several reasons to this new acceptance. Some will claim that a popular appeal has been discovered in the scientific developments which have given the industry light meters, or to the happy circumstances of a packaged article, the I.E.S. approved lamp, which carried with it a guarantee of good lighting results.

Practically-minded people, especially if engaged in the sale of lighting materials or equipment, will not care much just what has made the public conscious of its need for light. Rather they will be thankful that something has made it so, and thus reduced what used to be an almost insurmountable sales obstacle. They will use the opportunity that exists, capitalize upon the widespread publicity and interest, and help the now conscious public to obtain that which it needs to see better and more.

While braintrusters dream of a more abundant life, we of the electrical industry, practical realists that we are, busy ourselves to provide it to our customers. If 85 per cent of our perceptions of life are obtained through seeing, we can help anyone live more abundantly by bringing him better light for better sight.

An All Industry Forum

PLANS just announced by the Pacific Coast Electrical Association for the forthcoming year bring into reality a dream that has inspired a group of earnest workers to unselfish labor for many years past. They assure the establishment of a real all-industry forum where mutual problems may be discussed, answers arrived at, and cooperation and harmony promoted for the benefit of all.

This has been accomplished by broadening the unique technique which was developed last year in the presentation of vital problems and inviting answers from all and sundry in any position in the industry who might have an answer. Last year the initial problems were selected with a view of creating interest and provoking discussion. This year each branch of industry will be given the *initial* opportunity of presenting what it considers *its* most vital problem in its relation with the other branches. Manufacturers, wholesalers, contractors, dealers and utilities, meeting together for the common welfare, will each seek the advice and counsel of the whole group. From the score or more of problems presented and discussed at the opening conclaves, the guidance committees will select eight—four technical and four commercial—for final submission to the whole membership for answers.

Last year the original problem papers were so complete and thorough that nothing more could be said in posing the problems. Then, too, there was criticism that they were all fundamentally utility in character. This year both of these objections have been overcome. The goal of an all-industry forum is in sight.

With the support and participation from every branch which this program merits should come a continuation of understanding and harmony, a new appreciation of the problems and opportunities of the industry and a wave of new ideas for improvement and great profit.

Sniping Electric Cookery

JUST how far can competition between gas and electric ranges go before internecine warfare breaks out? For several years this competition has been friendly and gentlemanly despite the suppressed rivalry of the two industries. There have been sporadic outbreaks, with subsequent apologies and peaceful selling.

Recent events seem to indicate that all this may change. In current advertising in consumer magazines, the Pacific Coast Gas Association indulges in a sniping campaign against electric cookery that is neither ethical nor in the interests of inter-industry harmony. Pictured is a home economics editor's office. She is telling a friend:

"Officially, I couldn't say this but between ourselves, Anne, as friend to friend, in my articles and lectures I must be impartial of course. But, confidentially, Anne, if I were buying a new range for my own kitchen, two advantages alone (not to mention others) would make me choose a gas range."

The advertising copy then goes into a discussion of speed and economy, making comparisons only by inference.

Now advertising has been critized and condemned for false impressions created by half-truths and innuendo. The widely discussed Tugwell bill introduced in Congress proposed strict regulation of advertising to prevent such practices. Certainly the gas industry would object strenuously if some phase of its operations were similarly attacked with half truths, inferences and indirect statements.

Perhaps this present campaign has been inspired by the highly favorable publicity electric cookery has been receiving in the national women's magazines such as *McCall's* and others. Perhaps the aggressive selling of the electrical industry which has built electric range sales so far this year to double the figure for 1934 with indications that 1935 sales will reach an all time high, may be responsible. Whatever the cause, there can be no legitimate excuse for such tactics.

The electrical industry has no complaint against those progressive combination companies whose sales programs are impartial and which leave the final choice up to the customer. But it definitely must condemn any sniping policy such as is displayed in this current advertising. The position of gas cookery is not so secure but what it might be vulnerable to charges more damaging than any which might be leveled at electricity.

However, the electrical industry wants none of that kind of selling. The advantages of both have such merit that they can be sold ethically and truthfully. The final choice should rest with the customer, for he is the one to be satisfied with the cookery method and he also pays the bills.

News of Note + + +

Hetch Hetchy Power Contracts Held Illegal By Ickes

Ruling that the City of San Francisco had broken the provisions of the Raker Act by disposing of Hetch Hetchy power through an agency agreement with the Pacific Gas and Electric Co., Secretary of Interior Harold B. Ickes definitely placed before the people of that city the problem of municipal distribution of electric energy. Up to the present, the output of the city's Mocassin Power house, a part of the Hetch Hetchy water project, has been sold to P.G.&E. for distribution at a price which has netted the city as high as $2,000,000 annually. According to Mr. Ickes under Section 6 of the Raker Act the grantee of water rights is prohibited from selling either water or power generated therefrom to a private corporation or individual.

In his ruling, Mr. Ickes pointed out that two courses are open to the people of San Francisco; either passing a general bond issue to provide for a municipal distribution system which requires a two-thirds vote; or amending the city charter so that a majority vote would permit financing such a system by revenue bonds. The latter proposal was defeated at the last election. In building a municipal distribution system, it would be necessary to include an adequate steam power plant for dry year and emergency use which would greatly increase the amount necessary and add to the bonded indebtedness of the city accordingly.

Both of the steps suggested by Secretary Ickes have been defeated by popular votes.

●

Puget Sound Reduces Rates, Raises Wages

Rate reductions aggregating $208,160 a year in territory outside the city limits of Seattle and a graduated 10 per cent increase in wages to all company employees, except executive officers, have been announced by Frank McLaughlin, president of the Puget Sound Power & Light Co. These moves are a part of a compromise with the Washington Department of Public Service wherein the department's two-year investigation and valuation of the company is immediately suspended.

The new rates, which were effective Aug. 1, reduce present rates ½ cent on the top block and 1 cent on the lower block. Residential and farm service will now carry a charge of 5 cents for the first 40 kw.-hr.; 3 cents for the next 100; 2 cents for the second 100, and 1 cent for all over 240 kw.-hr.

The wage increase went into effect with a 2.5 per cent raise effective July 15. Another 2.5 per cent increase will be effective within three months and two others will be granted prior to April 15, 1936.

All cases involving the company and the Department of Public Service have been suspended. The two-year valuation proceedings have already cost the company $780,000 and it was estimated an additional $200,000 would have to be spent to complete the appraisals and accounting studies. In addition to these expenditures by the Puget Sound Power & Light Co., the Department has spent approximately $100,000 and estimates that an additional $100,000 would be required to complete the case. In its order the department said: "Since the wage earners and rate payers of the company can secure immediately as many and as valuable direct benefits as existing or foreseen conditions indicate we would be able to effect at the conclusion of the investigation, the department should not cause the expenditure of an additional $300,000 to carry the investigation to a formal conclusion at this time."

The order points out further that the company has eliminated non-uniform rate schedules and has largely standardized all rates throughout its territory. The company will file with the department the completed appraisals and historical cost studies which it has made of its properties.

Conclave Dates Set

Fall conclaves of the Pacific Coast Electrical Association will be held in San Francisco, Oct. 17 and 18, and in Los Angeles, Oct. 24 and 25, according to present plans. Complete details regarding the meetings will appear in the October issue.

Principal innovation this year will be the general presentation of a variety of problems by each branch of the industry for discussion at the conclaves. From these problems and the discussion the guidance committees will select eight for solution by the membership. As was the case last year, prizes aggregating $680 will be awarded for the best solutions.

Tax Value Set For California Utilities

Valuation of California's public utilities for taxing purposes set by the state Board of Equalization is $971,137,515. This includes electric and steam railroads, electric, gas and water companies, and telephone and telegraph companies. This is $74,702,055 less than the original figure, which was strenuously opposed by many of the utilities.

This valuation was necessary so that utilities' properties might be returned to local tax roles in conformance with a law passed in 1934 repealing the state gross revenue tax and substituting therefor the same tax rates and assessments as apply to any property.

Bulk of the original reduction went to Pacific Gas and Electric Company under a ruling from the state attorney general exempting from the company's taxable intangibles the stocks of wholly-owned subsidiaries which the board had classed as solvent credits subject to taxation. The amount exempted was $73,996,600.

Complaints of over-assessment filed by many utilities with the board indicates that litigation may be resorted to before valuations satisfactory to all parties are reached.

●

G-E Builds Condensers For Boulder Dam Line

Two of the largest hydrogen-cooled synchronous condensers ever built will be constructed by the General Electric Co. for the Los Angeles Bureau of Power & Light to be installed on the receiving end of the 270-mile transmission line from Boulder Dam. The machines will be rated at 60,000 kva., 13,800 volts, 60 cycles. The installation will be an example of one of the standard applications for synchronous condensers where they perform the function of controlling the power factor of the load so that regulation and losses of the line can be held within reasonable values. The machines will be installed outdoors.

●

• BONDS in the amount of $12,000,000 voted last November by the Sacramento Municipal Utility District for the purchase or construction of an electrical system have been validated in a decision handed down by Superior Judge J. O. Moncur of Plumas County. It is probable, however, that the case will be carried to the state supreme court before being finally adjudicated.

Heaters with Tanks of EVERDUR *serve the mutual interest* of the Utility and the Public

Water heaters with Everdur tanks *offer the greatest value* obtainable! They serve the mutual interest of the utility company and the user of hot water. Here are the reasons why:

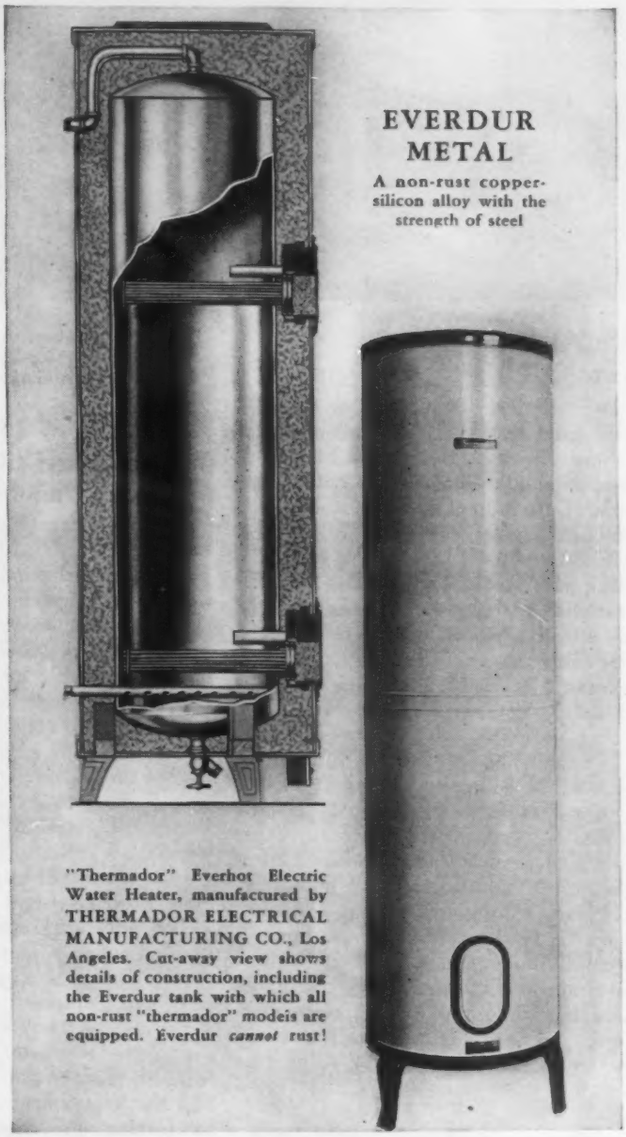
They give satisfactory service indefinitely.
They cost the user far less in the long run.
They do away with all rust troubles.
They require far less servicing.
They provide steady consumption of electricity.
They are readily available at unusually attractive prices.

Everdur is copper, specially alloyed with silicon to provide the strength and welding properties of steel. Since Everdur is immune to rust, yet possesses these superior physical advantages, leading makers of automatic heaters have standardized on Everdur for rust-proof tanks.

Always there are two interests to consider: your company's and your customers'. The sale of water heaters with Everdur tanks better serves the utility company and the public as well. 8894

EVERDUR METAL

"Everdur" is a registered trade-mark, identifying products of The American Brass Company made from alloys of copper, silicon and other elements.



"Thermador" Everhot Electric Water Heater, manufactured by THERMADOR ELECTRICAL MANUFACTURING CO., Los Angeles. Cut-away view shows details of construction, including the Everdur tank with which all non-rust "thermador" models are equipped. Everdur *cannot* rust!

ANACONDA
from mine to consumer

THE AMERICAN BRASS COMPANY

General Offices: Waterbury, Connecticut
Offices and Agencies in Principal Cities
In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ont.

EVERDUR METAL *for* TANKS

Night cable-spinning operations make the San Francisco-Oakland bridge a necklace of jewels

Clinical Discussion to Feature R.M.E.A. Convention

The "clinical" procedure, so successfully tried last year, will be repeated at the Rocky Mountain Electrical Assn.'s annual convention at Estes Park, Colo., Sept. 9-10-11. No set speeches are scheduled. Discussions will be free-for-all.

The 1935 gathering, judging by reservations, will have a record-shattering attendance, including representatives of the electrical industry from the Dakotas, Nebraska, Arizona, Idaho, Utah and Texas, in addition to the customary delegates from Colorado, Wyoming and New Mexico. An innovation will be complete rehabilitation of lighting facilities at the Stanley Hotel, convention headquarters, with old equipment removed and the latest type of fixtures substituted. A complete electrical exhibit, including newest modes in refrigeration, radios, lamps, air conditioning, etc., will be one of the convention features. The Stanley's celebrated sun room will be converted into an outdoor lighting exhibit, with evergreen trees, chromatic fountain, flood lights and illuminated rose garden.

•

• General Electric Supply Corp. will move its Portland office on October 1st into a four-story building at the corner of Northwest Broadway and Everett St. Approximately $40,000 is being spent on remodeling the structure for occupancy. One of the features will be a large sales room 80x100 ft., used as a display for General Electric products.

Washington Utility Law Declared Unconstitutional

Branding the 1933 utility regulation law as a violation of both the state and federal constitutions and a possible weapon of persecution in the hands of a hostile director of public service, the Washington state supreme court has ruled that the state could not collect investigation costs from the companies investigated. The decision reverses a Thurston county superior court decision in five suits brought by the department to collect costs from the Puget Sound Power & Light Co., Winlock Water Co., Oregon - Washington Telephone Co., Northwestern Electric and the Inter-State Power & Light Co.

The state supreme court's decision pointed out that the law put the utilities at the mercy of a director who could force any company out of business by a series of expensive investigations which the company, under the law, would be forced to pay. It pointed out that the department could discriminate by forcing one company to pay and not another, and the court declared that the law "destroys and denies the American idea of fair play which underlies our system of government."

Despite the above ruling, Fred J. Schaaf, director of the Department of Public Service, states the Puget Sound Power & Light Co. must pay the department the $100,000 in costs it agreed to pay under the recent rate reduction program.

Sodium Lamps to Light San Francisco-Oakland Bridge

Sodium lamps providing more than 8½ million lumens will light the San Francisco-Oakland Bay Bridge, according to an announcement by General Electric Co., whose engineers designed the equipment. A total of 922 G. E. Novalux sodium luminaires will be supplied and will be used in 25 circuits strung along about 15 miles of roadways for the double-deck spans, the tunnel, and the approaches.

On the upper deck of the bridge to be used for passenger vehicles and other high-speed traffic, 6,720,000 lumens of 10,000 lumen sodium lamps will be installed, while 1,500,000 lumens of 6,000-lumen lamps will be used on the lower deck for trucks and similar lower speed traffic.

Series-type circuits will be used and will be so arranged that adjacent lamps will be connected to different circuits, thus permitting a circuit to be cut out without plunging any one section of the bridge into darkness.

The fixtures to be used will be of modernistic appearance. The posts will be supplied by the Union Metal Mfg. Co., Canton, Ohio. Alta Electrical and Mechanical Co., Inc., of San Francisco, is the electrical contractor.

•

J. D. Ross of Seattle Gets PWA Appointment

J. D. Ross, superintendent of the Seattle City Lighting Department, left Seattle on August 13 for Washington, D. C., to become chief consulting engineer of a newly created power division of the Public Works Administration. He will assist in shaping its policies and perfect its organization throughout the United States. It is stated that superintendent Ross will make his headquarters in Seattle and will retain his city light position.

In his new job, Superintendent Ross will be virtual head of the new division, under Harold L. Ickes, Secretary of the Interior and general administrator of the PWA. He is a personal friend of President Roosevelt and Mr. Ickes.

Much of the work coming under Ross' supervision and direction will be to coordinate the power development programs of the various states, municipalities, power districts and other groups turning to the PWA for financial assistance, as well as to help decide what amount of federal aid they merit.

Glen H. Smith, Ross' assistant in City Light engineering details, has been in Washington, D. C., for the past three months and will stay some time longer as assistant to M. O. Swanson, chief engineer of the Rural Electrification Administration.

Pacific Gas Moves to Dissolve Nine Subsidiaries

Dissolution of nine stock-controlled subsidiaries is proposed by Pacific Gas and Electric Company in an applicatoin filed with the California State Railroad Commission. This program follows the company's plan of consolidating all of its properties under its own management. Companies affected are Great Western Power Company of California and its subsidiaries, Great Western Power Company, City Electric Company, Feather River Power Company, and California Electric Generating Company, and also Mt. Shasta Power Corporation, Sierra & San Francisco Power Company and Modesto Gas Company.

Although these companies have total capital obligations of $225,000,000, the dissolution involves primarily a bookkeeping operation, since the parent company owns practically all common and preferred stock. Only cash outlay required involves $2,500,000 par value on preferred stock of the California Electric Generating Company and $250,000 preferred of Great Western Power Company.

The new corporate setup would leave the company with only two subsidiaries, namely, San Joaquin Light & Power Corporation and Midland Counties Public Service Corporation.

•

• FRITZ ZIEBARTH, Long Beach electrical contractor, with a bid of $818,538.09, was the low bidder on its 230,000-volt transmission line project, it was announced by the Metropolitan Water District. The line is one to bring Boulder Dam power 237 miles to points along the Colorado River Aqueduct. The bid covers a proposal to furnish materials and erect transmission line towers and string the required conductors. Other bidders included Emsco, Los Angeles; Columbia Steel, of Torrence; Alta Electrical and Mechanical Co., San Francisco, and Forney Engineering Co., Dallas, Tex.. The district estimated the total cost of the line, including what will be furnished by the district, at $1,650,000. Fritz Ziebarth, in company with H. H. Walker, recently completed the construction of power lines at Fort Peck and Mason City on government projects.

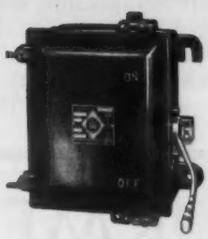
•

• DR. JOHN R. HAYNES, for thirty-five years prominently identified with municipal affairs in Los Angeles, was re-elected president of the municipal Board of Water and Power Commissioners. Commissioner A. F. Southwick was re-elected vice-president.

• REPORTS FROM Washington, D. C., indicate that legislation is being framed to cover the sale of power from the Bonneville Dam on the Columbia River. The legislation proposes that the power shall be sold by the War Department with the Federal Power Commission acting as a wholesale rate-fixing agency.

COLT-NOARK

SWITCHES - MOTOR STARTERS - FUSES



The New COLT-NOARK Cast Iron Dust Tight and Weatherproof Switches

Type "A" Dualbreak Switches cased in rugged cast iron boxes. Water and dust tight. Fusible and Non-Fusible. Install them wherever life for a safety switch is tough!

QUADBREAK AND DUALBREAK TYPE A SAFETY SWITCHES
DUALBREAK AND NUBLADE TYPE C SAFETY SWITCHES
TYPE D SWITCHES
MOTOR STARTERS
METER SERVICE SWITCHES
COMBINATION RANGE AND ENTRANCE SWITCHES
RENEWABLE, INDICATING AND NON-INDICATING FUSES
FUSE ACCESSORIES
CAST IRON BOXES AND FITTINGS
LINE MATERIAL

PACIFIC COAST REPRESENTATIVE
H. B. SQUIRES COMPANY
San Francisco — Los Angeles — Seattle

COLT'S PATENT FIRE ARMS MFG., CO.
Electrical Division :: Hartford, Conn.

★ ★ ★ A 3-STAR PRODUCT

CRYSTALITE PRODUCTS CORPORATION
The West's only manufacturer of all types of Illuminating Glassware and Glass Specialties. Glendale, Calif.

LEONARD R. FOSS STUDIOS, INC.
Highest quality Parchment Shades. Standard — or made to specifications. Address: Oakland, California.

LUMIDOR MFG. CO.
Leading manufacturer of direct-indirect floor or student lamps. Standard — or made to specifications. Address: Alhambra, California.

Power Companies! Distributors! Dealers! Here is a new, 3-star line. Our 1935 Lumidor floor and student lamps. Fast-moving, wattage-building, profit-making Type S1-2 Student Lamp illustrated. Several territories open. Wire or write for full details and specifications.

Lumidor Manufacturing Co. Inc., Alhambra, Cal.
All Products Approved I. E. S.—1935

LUMIDOR MFG. CO.

Washington Letter

(Special Correspondence)

Rural Electrification

As the result of a nation-wide study of rural electrification possibilities, a committee representing the privately-owned utility industry has reported to the Rural Electrification Administration that the industry can undertake projects totaling in excess of $100,000,000 during 1935-36.

Basing its figures on the assumption that low-rate government funds will be provided for house wiring and for the purchase of appliances, the committee estimates that 78,180 miles of rural lines can be built at a cost of $75,320,000 and that an additional $38,365,000 will be required for meters, transformers and services. The program would serve 205,000 customers on new lines and add 66,000 new customers on present lines.

•

Holding Company Bill

A modified "death sentence" holding company bill incorporating most of the features which aroused a flood of protest from investors was passed by both houses of Congress during the closing rush before adjournment. The measure gives the Securities and Exchange Commission the power to pass upon the life or death of any holding company.

•

REA Rules

Government money in the form of loans, not grants, at 3 per cent interest for twenty years will be made available to all organizations, both public and private, for rural electrification projects. Under rules governing REA loans, contained in a presidential executive order, labor from relief rolls is to be used; projects must be self-liquidating; 25 per cent of the load must be expended for labor; REA will have authority to approve specifications and supervise construction, and REA will set hours of labor.

•

EHFA Now National

Electric Home and Farm Authority, Inc., TVA's auxiliary organization formed for the purpose of pushing the sale of electric appliances, has been reorganized on a national basis. Headquarters will be moved from Chattanooga, Tenn., to Washington.

Besides extending its operations to include the entire country, both urban and rural, EHFA plans to enlarge the list of appliances which it will finance to include all types of electrical farm equipment and plumbing supplies. No sales will be made direct; the corporation will function by purchasing from the usual sales agencies, customers' notes extending over periods of from four to seven years, depending upon the amount and type of equipment purchased.

•

Ickes Defines PWA Loans

Social desirability of removing political influence of utilities in municipal affairs is a factor taken into consideration by PWA in extending grants for construction of municipal power plants, Secretary of the Interior Ickes has indicated. Asked to explain PWA policy on municipal plant construction loans and grants where there is already existing power service, Secretary Ickes said a city has as much right to decide it wants PWA money for a power plant as for municipal buildings or an airport. "The only thing we are interested in is if it can justify its request for a grant economically."

•

• CALIFORNIA'S $170,000,000 Central Valley water project will receive an initial allotment of $20,000,000 as a result of action by the Allotment Board of the Public Works Administrator. The project will be constructed under the supervision of the U. S. Bureau of Reclamation, provided the plans now under consideration are finally approved.

USED TRANSFORMERS

● IN STOCK FOR IMMEDIATE DELIVERY

QUANTITY	CAPACITY	MAKE	Voltage Pri.	Voltage Sec.
6	1.5 kva.	Westinghouse	440 "	220/110 "
2	1.5 "	General Electric	2300 "	230/115 "
7	3 "	Westinghouse	440 "	220/110 "
1	3 "	"	2300 "	440/220 "
5	5 "	"	440 "	220/110 "
1	5 "	"	2300 "	230/115 "
3	7.5 "	"	2200 "	220/110 "
8	7.5 "	General Electric	2200 "	220/110 "
2	7.5 "	Westinghouse	440 "	220/110 "
2	10 "	"	2200 "	220/110 "
2	10 "	"	440 "	220/110 "
2	15 "	General Electric	2300 "	460/230 "
2	15 "	"	440 "	220/110 "
1	25 "	"	2300 "	460/230 "
1	25 "	"	2300 "	460/230 "
2	25 "	Westinghouse	2300 "	460/230 "
2	25 "	"	2200 "	220/110 "
1	50 "	"	2200 "	220/110 "
2	50 "	"	30000 "	440 "
1	200 "	Moloney (Furnace)	4600 "	50/75/100 "

All of the above Transformers are backed by our 1 year guarantee

JEFFRIES TRANSFORMER CO.

5706 Long Beach Ave., Los Angeles, Calif.

DEPENDABLE TRANSFORMERS SINCE 1923

Electric Appliances, Inc. to Move to New Quarters

Electric Appliances, Inc., San Francisco and northern California distributors and dealers in General Electric appliances, recently moved to attractive, new quarters at 2001 Van Ness Ave. at the corner of Jackson St., San Francisco. The new home of Electric Appliances, Inc., was formerly a Lincoln garage and is a large two-story building. It was planned that all of the various functions of the company would be carried on under one roof. This would mean bringing together of the warehouse and service shop, display room and offices, not only for Electric Appliances, Inc., but also for George Ruck, Pacific Coast manager of General Electric appliance sales. The offices of the air conditioning department also were to be moved from the Russ Building, as likewise were the local offices of the G. E. contract division, the financing division for time paper.

The new quarters are being air conditioned with G. E. air conditioning units which will be used actually to demonstrate the benefits of air conditioning in the company's own offices. A model kitchen which was a feature of the former location at the corner of Sutter and Stockton Sts. will be prominently displayed on the sales floor of the new sales room.

•

• DAVE ALEXANDER, for the past eight years city electrician of Long Beach, Calif., has opened an electrical appliance and radio store at 2939 East Anaheim St., Long Beach, Calif.

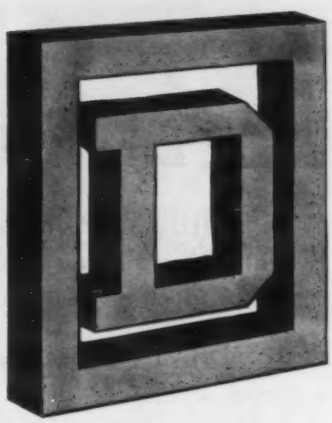
•

From the Family Album

Evidently oil field electrification is not an idea of 1930's. Here we have E. Woodbury, now an important executive of the San Diego Exposition; E. E. Valk, engineer for the general Electric Co. at Los Angeles; H. B. Strong, of the central station department, General Electric Co., Los Angeles, and W. G. Lane, of the Lane-Wells Co., Los Angeles, inspecting oil fields near the Southern California metropolis. The date you can guess from the streamlined appearance of their conveyance.

• THE PASADENA City Board of Directors has approved a contract with the City of Los Angeles for delivery of Boulder Dam power. The contract calls for the payment by Pasadena of $10,500,000 over a period of fifty years. In executing the contract the city officials approved the plan for change from 50 to 60-cycle frequency for electrical service in Pasadena. Expenditure of approximately $300,000 to alter electrical equipment to meet the change was authorized by the board. The city will bear the expense of changing the electrical equipment of consumers for the 60-cycle frequency.

• T. O. RUSSELL, consulting engineer of Eugene, Ore., has been appointed chief engineer of the Public Utilities Commission of Oregon by the new commissioner, Frank C. McCulloch. Mr. Russell is a civil engineer with wide experience formerly with railroads and lately in more diversified lines as a consultant. He spent two years in Brazil, 1928-30, representing British and American companies. As chief engineer of the Oregon Commission he succeeds Claude R. Lester, who has been retained by the commission for special work in connection with litigation in the Pacific Telephone & Telegraph Co. and Northwestern Electric Co.



50,000 LINE

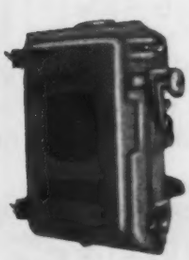
Safety Switch

built

Dust-Tight and Weather-Proof

WHEREVER dust or water condensation effects a hazard you need have no hesitancy in recommending or installing the Square D 50,000 Line Safety Switch. It embodies the ultimate in safe control of both power and light.

One of the outstanding features of the 50,000 Line is the ample wiring space—90 to 95% of the box interior can be so utilized—permitted by a unique method of elevating switch mechanism on four mounting posts. Standard equipment includes rust-resistant cast aluminum boxes with interlocked covers, preventing the opening of the switch box when the switch is in "on" position. Square D 50,000 Line Switches are available in capacity of 30 to 200 amperes. Their rugged construction assures long service life in any industrial or heavy duty installation.



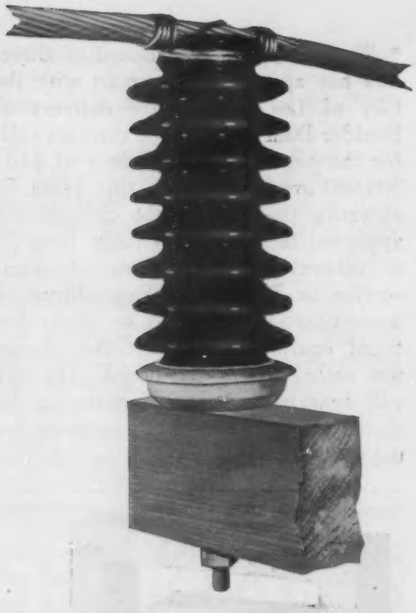
The compact Square D 50,000 Series has double break switch mechanism—positive pressure type fuse clips—flash-proof, non-carbonizable switch base—and affords high rupturing capacity.

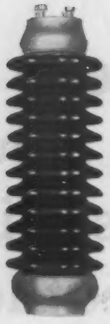
SQUARE D COMPANY

ELECTRICAL EQUIPMENT INC.

LOS ANGELES · SAN FRANCISCO · DENVER · HOUSTON

SQUARE D COMPANY · DETROIT · MILWAUKEE





THE LAPP LINE POST

THE Line Post reduces insulator design to its fundamentals—a single piece of porcelain cemented into a malleable iron base.

THERE is no pin or other conductive material within the insulator and as a result the charging current is low and the point of radio interference starting is high. Puncture becomes practically impossible.

THE Fog Type leakage surface assures ability to handle contaminated atmospheric conditions and the short, sturdy petticoats protect the body from damage under power arcover and the attacks of stones and bullets.

ALL attachments are external, eliminating thermal bursting forces from within and assuring long, trouble-free life.

THE Line Post provides the things YOU have always wanted from pin type insulators. Let us tell you about it. Ask for Bulletin No. 112.

The Station Post shown above is a parallel development with the Line Post. It is a most attractive unit for outdoor substations. Investigate!

LAPP

INSULATORS LAPP INSULATOR CO. INC. LEROY·N.Y.·U.S.A.

FACTORY REPRESENTATIVES

SAN FRANCISCO — MAYDWELL & HARTZELL — LOS ANGELES

Reno Has Large Air-Conditioning Job

The first large year-around air-conditioning system in the state of Nevada is now in operation at the Reno Country Club, which opened recently. General Electric equipment installed in the new country and night club heats, humidifies, cleans and circulates the air in winter, while in summer it cools, dehumidifies, cleans and circulates it.

The air-conditioning plant is of the type known as a "split system," in which part of the club is heated by warm air, part by steam, in order to provide the most effective heating, cooling and ventilation in relation to the architectural and physical characteristics of the various rooms and spaces. Warm air in winter and cool air in summer is furnished to the bar and dining room, while the card room, lounge and the cocktail promenade located on a glass-enclosed porch are steam-heated in winter and ventilated in summer.

The equipment comprising the air-conditioning system for the club includes three General Electric oil furnaces for heating; a 20-hp. compressor to supply the refrigeration for cooling; 12 unit evaporators for cooling and dehumidification; three fans of 1½-hp. each, to force the proper circulation of the air; filters to clean it, and ductwork to distribute it to the rooms. It is regulated by automatic controls, which give independent temperature control in ten different zones in the building.

•

• CONSTRUCTION of a $118,000 hydroelectric plant in Seward, Alaska, for the town of Seward will be started shortly, Don C. Browne, mayor, states. Permission has been obtained from Congress for the issuance of $89,000 in bonds which will be purchased by the PWA to be added to an outright grant of $30,000. The project will be designed with an installed capacity of two 420-hp. generating units and a power house, located seven miles from Seward.

•

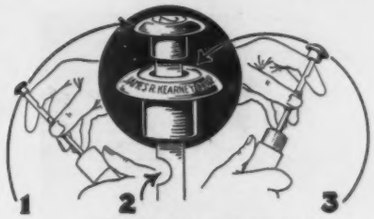
• SUIT HAS BEEN FILED by five municipalities and five schools against the Los Angeles Bureau of Power & Light to prevent the construction of the Boulder Dam power line through San Gabriel Valley. The principal objection raised in the injunction proceedings is that the line will constitute a serious fire hazard.

•

• EL PASO ELECTRIC CO. opened a new office at Anthony, New Mexico, last month, with L. T. Walker in charge.

WHERE TO BUY . . . IN THE WEST

KEARNEY
FITALL
FUSE LINK



No. 1 for ½-in. Buttonhead
No. 2 for Flat Terminal
No. 3 for ¾-in. Buttonhead

Triple terminal—spring feature on low amperages—all metal corrosion resistant—accurate performance—one link for all 15,000 volt expulsion or tension type cartridges.

Bulletin 312 Gives Complete Information

JAMES R. KEARNEY CORPORATION ST. LOUIS, MO.

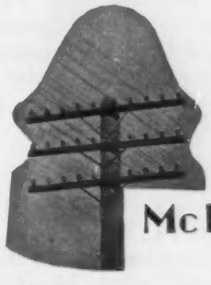
LOCUST PINS

Oak Brackets and Pole Steps

Safety • Strength • Lasting Economy

LOCUST PIN CO.
FRONT ROYAL, VA.

McLAUGHLIN GLASS INSULATORS



FOR TELEPHONE AND TELEGRAPH LINES

ADEQUATE STOCK
PROMPT DELIVERIES

McLAUGHLIN GLASS CO.
LOS ANGELES, CALIFORNIA

PROVIDENCE INSULATED WIRE CO.

Manufacturers of
Type AEIC Service Entrance Cable

PROVIDENCE

Samples and Prices on Request

■ Concentrically wound bare neutral conductor, galvanized oval armor, weatherproof and flame-proof finish.

For use on entrances without conduit.

Proof Against Theft of Current

PROVIDENCE INSULATED WIRE CO.
PROVIDENCE, R. I.

MAYDWELL & HARTZELL
INCORPORATED
FACTORY DISTRIBUTORS
LOS ANGELES SAN FRANCISCO

...about People

L. R. Grant of Puget Sound Dies in Seattle

Leslie Roy Grant, assistant to the general sales manager, Puget Sound Power & Light Co., with headquarters in Seattle, died in the Swedish hospital in that city recently, following an illness approximating two months. A complication of heart trouble and kidney disorder was said to be the cause of his death.

Mr. Grant was born in Kittery, Maine, in 1880, later moving to Somerville, Mass. After a course at Massachusetts Institute of Technology, he came to the Coast, where his father, Howard F. Grant, was manager of the Seattle Electric Co. Mr. Grant, however, located in Tacoma, where he was secretary of the Puget Sound Power Co. and the Tacoma Industrial Co., two Stone & Webster organizations.

In 1908 Mr. Grant moved to Seattle and joined the Seattle Electric Co. (railway department), where he remained until 1919, when he entered the sales department of the Puget Sound Power & Light Co. For years he was the suburban agent of the Seattle district, making a wide circle of friends in the rural territory where he was engaged in rural electrification.

•

• B. L. ZELLENSKY, pioneer electrical contractor of San Francisco, proprietor of Crown Electric Co., died July 18, 1935.

• H. K. GLASBY, formerly manager of the appliance department, Schwabacher-Frey Co., San Francisco, and before that with the Emporium, has been made department manager of the appliance department of the City of Paris, located along that department store's "Normandy Lane." Mr. Glasby, who has been president for the past two years of the San Francisco unit of the

H. K. GLASBY

Electrical Appliance Society of Northern California, is a graduate electrical engineer from California Institute of Technology. For the past ten years he has been connected with appliance selling in department stores of the bay region. He was once Pacific Coast manager for Freed-Eisemann Radio Corp., and later sales manager of The Braun Corp. of Los Angeles and of Pacific Wholesale Radio, Inc., of Los Angeles and San Francisco.

•

• H. L. GARBUTT has been appointed representative of the Central Tube Co., Pittsburgh, Pa., for northern California and the Hawaiian Islands. For the past twenty-seven years Mr. Garbutt was with the Westinghouse Electric & Manufacturing Co. and the Westinghouse Electric Supply Co., sixteen years as manager of the supply department and manager of the merchandising department in the northern California territory. He expects to have several additional lines of electrical supplies which will be sold through electrical wholesalers and which will be announced later.

•

• GUY E. DAVIS, merchandise manager of Pacific Power & Light Co., has been assigned to the office of Paul B. McKee, president, for special work during the next few months. James A. Lockhart, sales supervisor, will handle the merchandise department activities during that period. Special studies of merchandising and load building possibilities are to be made by Mr. Davis for the three associated companies.

• KEITH NOBLE, for 15 years associated with the Buzzell Electric Works, San Francisco, as sales engineer, has joined the sales organization of the Pacific Electric Motor Co., Oakland. Mr. Noble has been secretary and treasurer of the Electric Motor Dealers Assn. of Northern California from its inception, a position he resigned upon assuming his new duties. Members of that organization thereupon elected him to honorary membership in the association.

•

• CARL K. CHAPIN, prominent Pasadena electrical and civil engineer and a Los Angeles Department of Water and Power executive, has been appointed to an important position with the Tennessee Valley Authority. In his new duties, Mr. Chapin will be assistant to Clyde Errett, chief accountant under Controller Carr. Mr. Chapin has been granted a leave of absence from his duties with the Los Angeles utility during his work with the government. His headquarters will be in Washington, D. C.

•

• HOWARD H. BURDICK, well known electrical estimator in Los Angeles, has joined the Business Agent's Division of the Bureau of Power & Light, Los Angeles.

•

• TOM MCDONNOUGH, formerly with the Benjamin Electric Manufacturing Co., in the Southern California territory, is now connected with the Central Arizona Light & Power Co., at Phoenix, as lighting engineer.

Classified Section

• COST of undisplayed classified ads is 5 cents a word, minimum $1.00 insertion. Box numbers in care of our San Francisco office count as 10 words additional in undisplayed ads.

• RATES per column inch of displayed ads is $3.75.

• ALL classified ads are payable in advance.

ELECTRICAL WEST 883 Mission Street San Francisco, Calif.

SITUATION WANTED

SALES ENGINEER, technical graduate, 38 years old, married. General Electric test and 12 years experience selling electrical machinery and supplies to industrials, utilities, jobbers, contractor dealers and municipalities. Past two years and now employed in power sales and public relations work by utility in Middle West. Desire sales position with utility or manufacturer in Pacific Northwest where remuneration can be based on results produced. Box 101, Electrical West, 883 Mission St., San Francisco, Calif.

• FOR SALE—NEARLY NEW •

TWO WAGNER MOTORS

1—50 HP, 1725 RPM, 60 cycles, 3 phase, 2300 volt.

1—25 HP, 570 RPM, 60 cycles, 3 phase, 440 volt.

P. O. Box 454 — Albuquerque, New Mexico

PROFESSIONAL SERVICES

BYLLESBY ENGINEERING AND MANAGEMENT CORPORATION
Consulting Engineers
General design engineering, investigations, reports and estimates, and construction supervision for new or modernization projects in the utility or industrial fields.
231 South La Salle Street Chicago, Illinois

ELECTRICAL TESTING LABORATORIES
Electrical Photometrical, Chemical and Mechanical Tests. Inspection of Materials and Apparatus at Manufactory
80th St. and East End Ave., New York

ARTHUR R. KELLEY
CONSULTING ENGINEER
Reports and Valuations, Public Utility Industrial Properties
Edison Bldg. Los Angeles

• T. T. LEYDEN, formerly of B. K. Sweeney, Inc., and J. B. Jameson, of Davis & Shaw, Denver, have opened a new partnership establishment, Leyden-Jamison Co., at 726 15th St., Denver, in a store formerly operated by the Sweeney Co. Appliances are to be features by the new firm.

•

• A. R. CASSIDY, electrical engineer, has opened an engineering service bureau in the Builder's Exchange, 1729 19th St., Bakersfield, Calif. Mr. Cassidy plans to offer services in design of electric light and power installations and specifications and preparation of patent drawings and preliminary search for anyone in the southern San Joaquin Valley territory.

•

• CHARLES D. PETERS, JR., for several years associated with Cramer Electric Co. of Los Angeles, has established his own business under the name of the Peters Electric Co. The new company will be located at 5427 Santa Monica Blvd., Los Angeles, and will specialize in vacuum cleaner service and sales.

•

• JOHN J. HAYES, Pacific Northwest treasury representative of the Westinghouse Electric & Manufacturing Co., Seattle, has been transferred to the position of manager of the company's treasury division at Chicago.

•

• HARRY L. MASSER has been elected vice-president and assistant general manager of the Los Angeles Gas and Electric Corp., dropping the title of executive engineer which he assumed April 1, 1928.

•

• THOMAS W. DELZELL, manager of the land and franchise department of the California-Oregon Power Co., is the new chairman of the electricity and agriculture committee of the Oregon Reclamation Congress. Under his direction, the committee will investigate the possibilities of electric pumping for irrigation in the Willamette valley.

This . . .
completely
AUTOMATIC
Range
is thrilling today's buyers

With Built-in **TIME-A-TURE**

. . . that provides *complete* automatic operation in one unit — Clock, Temperature Control and Time Control. Three-way selector switch makes oven, appliance outlet or rear surface unit (or Handy Cooker) fully automatic.

Striking eye appeal in Silver, Green and Amber Pearl finishes . . . Get the facts now . . . Wire or write.

L&H *Advanced*
ELECTRIC RANGES

A. J. LINDEMANN & HOVERSON CO.
613 W. Cleveland Ave. Milwaukee, Wis.
New York Chicago San Francisco

CHROMALOX

SUPER-SPEED

REPLACEMENT RANGE UNITS

make new, fast-cooking ranges of old ones. They save many customers for power companies. They make easy profits for dealers. And they make lasting friends of range owners for both power companies and dealers.

A single trial sells a set. Write for details of the easy, resultful sales campaign.

EDWIN L. WIEGAND CO.
PITTSBURGH, PA.

Represented by

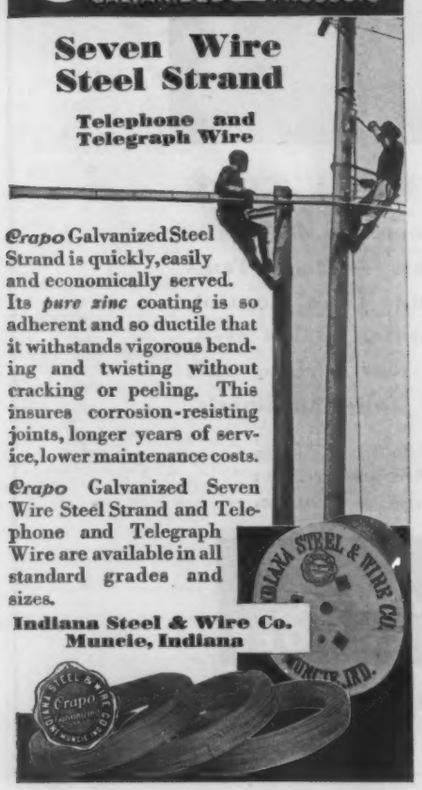
MONTGOMERY BROTHERS
911 Western Ave., Seattle, Wash.
524 S. W. Pine St., Portland, Ore.
61 Fremont St., San Francisco, Calif.
912 E. 3rd St., Los Angeles, Calif.

THE PETERSON COMPANY
1921 Blake St., Denver, Colo.

Crapo
GALVANIZED PRODUCTS

Seven Wire Steel Strand

Telephone and Telegraph Wire



Crapo Galvanized Steel Strand is quickly, easily and economically served. Its *pure zinc* coating is so adherent and so ductile that it withstands vigorous bending and twisting without cracking or peeling. This insures corrosion-resisting joints, longer years of service, lower maintenance costs.

Crapo Galvanized Seven Wire Steel Strand and Telephone and Telegraph Wire are available in all standard grades and sizes.

Indiana Steel & Wire Co.
Muncie, Indiana

...about the Trade

• SAVAGE DISTRIBUTING CO., San Francisco, the Pacific Coast distributor of the products of the Savage Arms, Corp., pursue a helpful policy for dealers in parts and accessories for household appliances. In its San Francisco headquarters a complete stock of every part and accessory for Savage washers, driers and all-electric ironers is carried. It is the fixed rule of the company that every order for parts and accessories must be filled and shipped on the day the order is received to minimize inconvenience to consumers.

•

• BRYANT ELECTRIC CO., manufacturers of the Bryant line of wiring devices, has moved its offices and warehouse into new quarters at 325 Ninth St., San Francisco. Increased facilities including adequate parking space have been provided at the new location.

•

• F. M. LYONS ELECTRIC CO. is moving into a new store at 5189 Whittier Blvd., East Los Angeles. A complete line of electric household appliances will be displayed, the company having been engaged in both electrical contracting and merchandising for the 14 years.

•

• FIX-IT SHOP, operated by C. B. Williams, at 617 West Garvey Road, Monterey Park, Calif., has opened a branch shop at 1621 Valley Blvd., Rosemead, Calif. Both shops will specialize in servicing of electrical washers, vacuum cleaners and other appliances.

•

• THE J. C. MORGANTHALER CO., dealer in all major household appliances, has opened up a new and attractive corner store at 101 East Center St., Anaheim, Calif. The store front is entirely surrounded with glass, offering a display visible from all directions. The previous store was at 245 East Center.

• CALIFORNIA ELECTRIC CONSTRUCTION CO., San Francisco, of which Clyde L. Chamblin is proprietor, announces that it has been made the authorized service station for Telechron electric clocks, in accord with a new policy of the Telechron company. Telechron, Revere, and Herschede electric clocks from all Northern California are directed here for repairs or servicing. A specialist has been put on to care for this work.

•

• FAIRBANKS, MORSE & CO. have announced that its Los Angeles and San Francisco branches have recently taken over the distribution of the new line of refrigerators, washing machines and radios, manufactured by the Fairbanks-Morse Home Appliances, Inc. The sales organization for these lines has been completed and full stocks are available at both points.

•

• O. W. COMBS, manufacturers' representative, 123 Eighteenth St., Los Angeles, has recently added to his lines the Chesler glass window reflectors, manufactured by J. Chesler & Sons Co., Brooklyn, N. Y., as well as a line of "gold seal" friction tape and splicing compound, manufactured by Jenkins Bros. (Rubber Division), Bridgeport, Conn. Mr. Combs also announces the recent addition of W. Lee Jones to his sales organization.

•

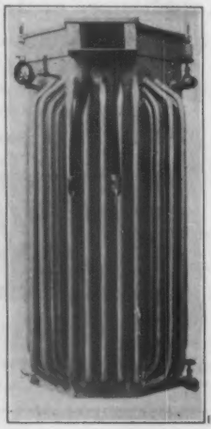
• MILLS GAS & ELECTRIC APPLIANCE SHOP, for many years located in Long Beach, Calif., has moved to a new and attractive store at 4813 Whittier Blvd., East Los Angeles, Calif.

•

• C. M. TRUSTY & SONS, electrical contractors, formerly at 211 North Main St., Santa Ana, moved into a new shop at 513 South Main St.

•

• NEPAGE MCKENNY CO. moved from 115 N. W. Ninth Ave., Portland, Ore., to a new location at 520 S. W. Pine St.



Want to SAVE Money — on TRANSFORMERS?

★ Because we are specialists in the transformer field we can manufacture transformers better and at a saving to our customers. Twenty-five years of experience enables us to build reliable transformers to meet every specification.

We have equipped our modern plant to render the finest transformer service in the West, both for economical repairing and for quick order filling on new transformers in all voltages and sizes.

Write or call our nearest agent for satisfactory transformer service.

GARDNER ELECTRIC MFG. CO.
4227 Hollis Street — Emeryville, Calif.

SEATTLE—Nicolay Sales Co., 304 Westlake North; DENVER—Kranefeld Eng. Co., 3417 E. 14th Ave.; LOS ANGELES—Utilities Supply Co., 1736 E. 15th St., Decla Sales Co. (Neon Only) 342 Towne St.

..in New Equipment

New Toastmaster

Waters-Genter Division of the McGraw Electric Co., Minneapolis, announces many new improvements to the Toastmaster Hospitality Tray for 1935-36. The new model comes provided with a folding stand in mahogany, walnut or antique white. A special design holds the tray securely and without the Toastmaster and accessories the stand and tray alone provide a handsome coffee table. The tray has been redesigned. Glassware also is new. The Toastmaster itself has been restyled.

•

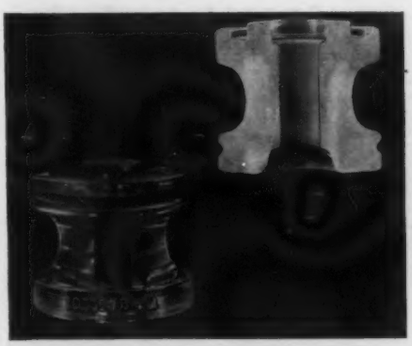
Small Size Drum Switch

Small size, a simple and sturdy mechanism and high capacity rating are the features of a new drum type reversing switch developed by Cutler-Hammer, Inc., Milwaukee, Wis. The switch is of the across-the-line type, furnished either in a standard enclosure or as a skeleton drum with mounting plates for special applications on machines. Arcing points are designed to give long wear and to be easily renewed. Movable contacts are embodied in the construction for easy renewal without any tools. This drum switch is said to be applicable to almost any kind of single phase, polyphase or D. C. motor.

•

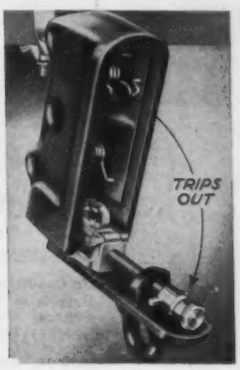
Lead Sleeve Glass Insulator

Owens-Illinois Glass Company, Muncie, Ind., has announced a new Hemingray glass insulator of a spool type, bushed with a lead sleeve. Exceptional ability to withstand dead-end or line pull is claimed for this insulator. The lead sleeve provides a hole of unvarying uniform diameter and acts as a cushion under stress, relieving the glass of excessive strain by its flexibility. It also protects against the slightest bend of the bolt and assures long life and low maintenance cost.



Kearney Tripomatic Fuse Cutout

The Kearney Tripomatic Fuse Cutout with the clamp-type terminals placed in aperatures in the rear of the box and separated from the cartridge chamber proper has been placed on the market by the James R. Kearney Corp., St. Louis, Mo. This terminal arrangement permits them to be easily adjusted and to take wires from No. 8 solid to No. 2 stranded. No cement, plated metal parts nor screw terminals are used with the result, it is claimed, that lose connections, heating, low voltage complaints, corrosion and interference are eliminated.



•

Wesix Cent-A-Watt

Wesix Electric Heater Co., San Francisco, has just announced a new portable radiant-convection electric heater which is an improved design of its famous Cent-A-Watt heater. The new model is made of aluminum with a bakelite handle and monel metal trim. The over-all height is 17 in. and the weight is 5 lb. 3 oz. The heater is rated at 1,250 watts, 110 volts. It carries a five-year guarantee.

•

New Rural Line Disconnecting Switch

A new disconnecting switch for lightly loaded 7.5 and 15 kv. circuits that exist on rural lines has been placed on the market by Delta-Star Electric Co., Chicago, Ill. It is designed for economical operation. Its construction features non-ferrous parts on "hot" side, self-aligning contacts, safety latches and solderless lugs. A formed steel universal base was developed for use on the switch where cross arm spacing in double arm construction is approximately the same as the switch insulator spacing. The switch is known as model "RFB-2C."

SEND US

your recalibration work and save several weeks' time

Perhaps you, too, have on hand a number of old Bristol's Recorders that now, after a long period of fine service, need re-conditioning. Or that should be modernized in order to measure temperatures or pressures under the different conditions and within the different ranges your processes today require.

If so, send them direct to us. Don't think of going to the expense and delay of having this work done several thousand miles away.

Just pack recorders carefully and ship to 311 Minna St., San Francisco. Also, mail order authorizing work to nearest branch office.

Bristol's West Coast Service Laboratory and Assembly Plant

THE BRISTOL COMPANY

Branch Offices: Rialto Bldg., San Francisco
747 Warehouse St., Los Angeles
Branch Factory: 311 Minna St., San Francisco

TRADE MARK

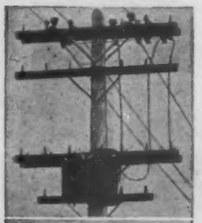
BRISTOL'S

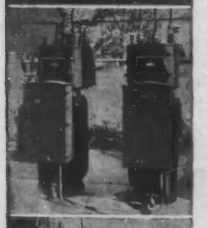
REG. U. S. PAT. OFF.

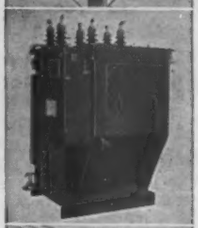
For Profitable Voltage Regulation

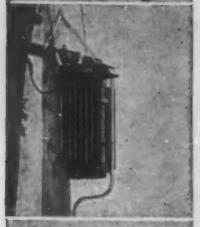
The 8 POINT PLAN
Offers
New and Improved Equipment for the Solution of Every Voltage-regulation Problem

◀ Automatic Generator-voltage Regulators

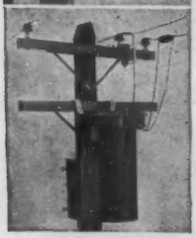

▶ Branch-feeder Step Voltage Boosters


◀ Station-type Induction Voltage Regulators


▶ Step Voltage Regulators for Higher Voltages


◀ Branch-feeder Induction Voltage Regulators

▶ Series Capacitors for Reducing Lamp Flicker


◀ Branch-feeder Step Voltage Regulators

▶ Autotransformers for Reducing Lamp Flicker

THE 8-POINT PLAN offers an opportunity to improve voltage at a profit by providing equipment for economical regulation at every vital point on the power-company system.

For information, address the nearest G-E sales office or General Electric, Dept. 6A201, Schenectady, N. Y.

350-121

GENERAL ELECTRIC

WHERE TO BUY IT IN THE WEST

Selling Hints

FOCUS THE BUYER on your listing in "Where to Buy" with a display box. This advertising SELLS goods and costs so little.

ELECTRICAL WEST
883 Mission St. San Francisco

Air Conditioning
Frigidaire Corp.
General Elec. Co.
Graybar Elec. Co., Inc.

Anchors, Guy
James R. Kearney Corp.

Appliances, Household
Apex Rotarex Mfg. Co.
Edison Gen. Elec. Appliance Co., Inc.
General Elec. Co.
General Elec. Supply Corp.
Graybar Elec. Co., Inc.
Lindemann & Hoverson Co., A. J.
Malleable Iron Range Co.
McGraw Elec. Co.
Waters-Genter Div.
Westinghouse Elec. Supply Co.

Boxes
General Cable Corp.
General Elec. Co.
Russell & Stoll Co.

Brackets, Wood
Locust Pin Co.

Bus Fittings
Burndy Eng'g Co.
General Elec. Co.

Buses
Aluminum Co. of America ..

Cable Accessories
General Cable Corp.
General Elec. Co.
John A. Roebling's Sons Co.

Cables
Aluminum Co. of America
American Steel & Wire Co.
Columbia Steel Co.
Crucible Steel Co. of America
General Cable Corp.
General Elec. Co.
Graybar Elec. Co., Inc.
Maydwell & Hartsell, Inc.
National Elec. Products Corp.
Providence Insulated Wire Co.
John A. Roebling's Sons Co.
Westinghouse Elec. & Mfg. Co.

Carbon Brushes
National Carbon Co., Inc.

When YOU need CARBON BRUSHES

Make use of the services of our San Francisco Sales Office and Brush Finishing Plant.

PROMPT DELIVERY ON ALL GRADES OF
National Pyramid Brushes

National Carbon Co., Inc.
Carbon Sales Division
599 Eighth St.
San Francisco, Calif.

An Additional Feature That Means Additional PROFITS for

MANUFACTURERS WHO ADVERTISE IN THE OCTOBER ISSUE OF ELECTRICAL WEST

FIRST ANNUAL *Sales Manual* OCTOBER ISSUE

Home Appliance APPEARS IN THE

ELECTRICAL WEST
883 MISSION ST., SAN FRANCISCO

Where to Buy It in the West—*Continued*

Carbon Products
National Carbon Co., Inc.

Central Station Equipment
Tom Wood

Chimes
Square D Co., Inc.

Circuit Breakers
General Elec. Co.
I-T-E Circuit Breaker Co.
Westinghouse Elec. & Mfg. Co.

Cleaners, Vacuum
Apex Rotarex Mfg. Co.
Clements Mfg. Co.
Cramer Elec. Co.

Coil Winding
Jeffries Transformer Co.

Compounds, Insulating
John C. Dolph Co.
General Cable Corp.
General Elec. Co.

Condensers, Electric
Allis-Chalmers Mfg. Co.
J. G. Corrin
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

Conduit
Aluminum Co. of America
General Elec. Co.
Youngstown Sheet & Tube Co.

Conduit, Underground
Fire Proof Wall Co.
Johns-Manville Corp.

Connectors
Burndy Eng'g Co.
James R. Kearney Corp.

Controllers
Clark Controller Co.

Cutouts
James R. Kearney Corp.
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

Demand Control
General Elec. Co.
Wesix, Inc.

Distribution Specialties
General Elec. Co.
James R. Kearney Corp.
W. N. Matthews Corp.
Maydwell & Hartzell, Inc.
St. Louis Malleable Casting Co.

Electrodes, Arc Welding
John A. Roebling's Sons Co.
General Elec. Co.

Fans
General Elec. Co.

Farm Electrification Equipment
General Elec. Co.

Fittings, Conduit
General Elec. Co.

Fixtures, Lighting
General Elec. Co.
Russell & Stoll Co.
Smoot-Holman Co.

Floodlighting
General Elec. Co.
S & M Lamp Co., Inc.
Smoot-Holman Co.

Fuses
Trico Fuse Mfg. Co.

Gasoline
Union Oil Co.

Generators
Allis-Chalmers Mfg. Co.
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

Graphite Products
National Carbon Co., Inc.

Ground Rods
Crucible Steel Co.
Maydwell & Hartzell, Inc.

Heaters, Air
Edison Gen. Elec. Appliance Co.
Montgomery Bros.
Noblitt-Sparks Industries, Inc.
Sandoval Sales Co.
Thermador Elec'l Mfg. Co.
Wesix Inc.
Edw. L. Wiegand Co.

Heaters, Water
Edison Gen. Elec. Appliance Co.
Lindemann & Hoverson Co., A. J.
Malleable Iron Range Co.
Sandoval Sales Co.
Thermador Elec'l Mfg. Co.
Wesix Inc.
Westinghouse Elec. & Mfg. Co.

Heating Element—Repair Part
Mend-It Sleeve Mfg. Co.
Edw. L. Wiegand Co.

Illuminating Glassware
Inland Glass Works, Inc.

Instruments, Measuring and Recording
The Bristol Co.
General Elec. Co.
Quality Elec. Co.
Roller-Smith Co.
Westinghouse Elec. & Mfg. Co.
Weston Elec'l. Instrument Corp.

Insulation
General Elec. Co.
Johns-Manville Corp.
C. D. LaMoree

Insulators
Corning Glass Works
Graybar Elec. Co., Inc.
Hemingray Glass Co.
Illinois Elec. Porcelain Co.
Lapp Insulator Co., Inc.
Locke Insulator Corp.
McLaughlin Glass Co.
Owens-Illinois Glass Co.
Westinghouse Elec. & Mfg. Co.

Ironers
Apex Rotarex Mfg. Co.
General Elec. Co.
Ironite Ironer Co.
Savage Distributing Co.
Gordon E. Wilkins

Knobs, Tubes, Cleats
Standard Elec'l Porcelain Mfrs.

Lamps, Mazda
General Elec. Co.
Westinghouse Lamp Co.

Lamps, Student
Lumidor Mfg. Co., Inc.

Lamps, Sun
General Elec. Co.

Lighting Equipment
Smoot-Holman Co.
Wuelker Flexo-Dome Co.

Line Material
Maydwell & Hartzell, Inc.

Meters
The Bristol Co.
General Elec. Co.
L. A. Nott
Sangamo Elec. Co.
Westinghouse Elec. & Mfg. Co.
Weston Elec'l Instrument Corp.

Molded Material
C. D. La Moree

Motors
Allis-Chalmers Mfg. Co.
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

Motor Starters
Allis-Chalmers Mfg. Co.
General Elec. Co.
Ward Leonard Elec. Co.
Westinghouse Elec. & Mfg. Co.

Oil, Lubricating
Associated Oil Co.
Union Oil Co.

Oil, Transformer & Switch
Associated Oil Co.
General Elec. Co.
Union Oil Co.

Panel Boards
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

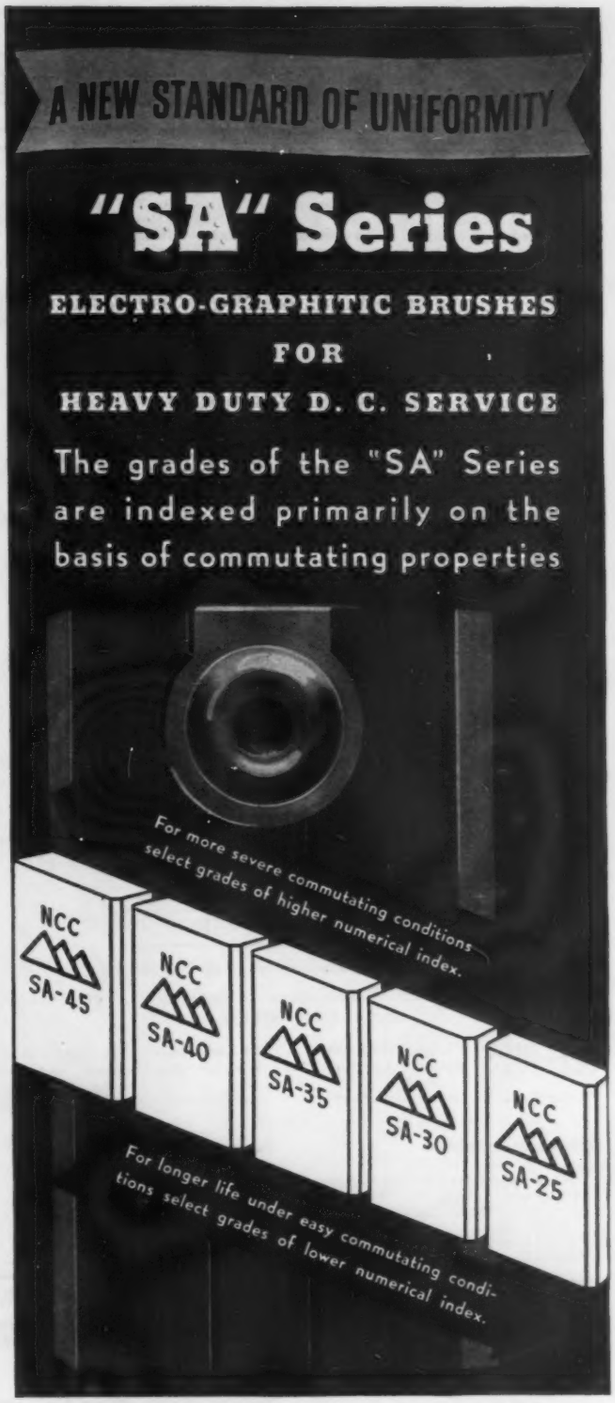
Photoelectric Cells
General Elec. Co.
Weston Elec'l Instrument Corp.

Pins, Wood
Locust Pin Co.

Pole Line Hardware
General Electric Supply Corp.
Graybar Electric Co., Inc.
Hubbard & Company
Joslyn Co. of Calif.
Kortick Mfg. Co.
Locke Insulator Corp.
Maydwell & Hartzell, Inc.

Porcelain
Standard Elec. Porcelain Mfrs.

Public Utilities
California Oregon Power Co.
Idaho Power Co.
Mountain States Power Co.
Northwestern Electric Co.
Pacific Gas and Electric Co.
Pacific Power & Light Co.
Portland General Electric Co.
Puget Sound Power & Light Co.
San Diego Cons. Gas & Elec. Co.
San Joaquin Light & Power Corp.
Southern California Edison Co. Ltd.
Utah Power & Light Co.
Washington Water Power Co.


A NEW STANDARD OF UNIFORMITY
"SA" Series
ELECTRO-GRAPHITIC BRUSHES
FOR
HEAVY DUTY D. C. SERVICE
The grades of the "SA" Series are indexed primarily on the basis of commutating properties
For more severe commutating conditions select grades of higher numerical index.
NCC SA-45
NCC SA-40
NCC SA-35
NCC SA-30
NCC SA-25
For longer life under easy commutating conditions select grades of lower numerical index.

EVERY BRUSH THE SAME IN PHYSICAL PROPERTIES AND PERFORMANCE

Write for specific grade recommendation for your heavy duty D. C. service.

NATIONAL CARBON COMPANY, INC.
Carbon Sales Division, Cleveland, Ohio
Unit of Union Carbide and Carbon Corporation
Branch Sales Offices: New York · Pittsburgh · Chicago · San Francisco

WHERE TO BUY IT IN THE WEST

STANDARD ELECTRIC RANGES handled by
Arizona—Representative: Frank D. Davison, Phoenix. California—San Francisco: Kaemper-Barrett Corp., The Geo. H. Eberhard Co. Los Angeles: Listenwalter & Gough, Graham-Reynolds Elec. Co. Nevada—Reno: H. E. Saviers & Son. Utah—Salt Lake City: W. H. Bintz Co. Washington—Tacoma: Home Electric Co. Honolulu, T. H.—von Hamm-Young Co., Ltd.
Pacific Coast Sales Manager: WM. P. SWARTZ
629 S. Serrano, Los Angeles, Calif.

Pumps
Pelton Water Wheel Co.

Range Units
Edison Gen. Elec. Appliance Co.
Edwin L. Wiegand Co.

Ranges
Edison Gen. Elec. Appliance Co.
General Elec. Co.
General Elec. Supply Corp.
Lindemann & Hoverson Co., A. J
Malleable Iron Range Co.
Standard Elec. Stove Co.
Walker & Pratt Mfg. Co.

Refrigerator Parts & Accessories
California Refrigerator Co.

Refrigerators
Frigidaire Corp.
General Elec. Co.
General Elec. Supply Corp.
Graybar Elec. Co., Inc.
Malleable Iron Range Co.
Westinghouse Elec. & Mfg. Co.

Relays
General Elec. Co.
Leach Relay Co.

Rheostats & Resistors
General Elec. Co.
Westinghouse Elec. & Mfg. Co.

Switches, Time
R. W. Cramer & Co.
General Elec. Co.
Sangamo Elec. Co.
Tork Clocks, Inc.

Switchgear
Allis-Chalmers Mfg. Co.
General Elec. Co.
Pacific Elec. Mfg. Co.
Westinghouse Elec. & Mfg. Co.

Tapes—Friction and Rubber
Clifton Mfg. Co.
Geo. E. Honn Co.

Terminals, Cable
General Cable Corp.
General Elec. Co.

Testing Devices
Electrical Facilities, Inc.

Tools, Live Line
James R. Kearney Corp.

Transformers
Allis-Chalmers Mfg. Co.
American Transformer Co.
E. H. Bell
Gardner Elec. Mfg. Co.
General Elec. Co.
Jeffries Transformer Co.
Pennsylvania Transformer Co.
Sangamo Elec. Co.
Western Transformer Co.
Westinghouse Elec. & Mfg. Co.

★ **DEPENDABLE TRANSFORMERS** ★

For Dry Type Industrial and Signal Use

***Repair Service* for distribution transformers, Auto-starters and similar equipment.**

JEFFRIES TRANSFORMER CO., 5706 Long Beach Ave., Los Angeles
Electric Agencies, 2059 Webster St., Oakland, California

Service Organizations
Elec'l Testing Labs.
Fort Wayne Correspondence School
McGraw-Hill Book Co.
Northwest Elec. Light & Power Association
Pacific Coast Elec'l Ass'n
Pacific Coast Elec'l Bureau

Strand, Guy
Crucible Steel Co.
Maydwell & Hartzell, Inc.
Pacific Wire Rope Co.

Switchboards
Allis-Chalmers Mfg. Co.
General Elec. Co.
Square D Co., Inc.

Switches, Coin Operated
Welcome Meter Co.

Switches, High Tension
Bowie Switch Co.
James R. Kearney Corp.
General Elec. Co.
C. D. LaMoree
Pacific Elec. Mfg. Co.

Switches, Meter Test
General Elec. Co.
Meter Devices Co.

Switches—Pressure and Temperature
The Bristol Co.
Garland-Affolter Eng'g Corp.

Switches, Safety
Colt's Patent Fire Arms Mfg. Co.
Meyers Safety Switch Co., Inc.
Parker Elec'l Mfg. Corp.
Square D Co., Inc.

Tubing, Elec'l Metallic
Aluminum Co. of America

Turbines
Pelton Water Wheel Co.

Valves
Pelton Water Wheel Co.

PARTS & ACCESSORIES
***For* SAVAGE** Washers & Dryers
- PROMPT DELIVERY
- COMPLETE STOCKS

Savage Distributing Co., Inc.
383 Brannan St., San Francisco

Washers, Clothes
Apex Rotarex Mfg. Co.
Elec't Appliance Service Corp.
General Elec. Co.
Little Giant, Inc., Ltd.
Savage Distributing Co.
Washing Machine Parts Co.

Authorized Factory Replacement Parts Service
●
Automatic, Easy, Gainaday, Horton, Meadows, Roto Verso and Universal Washers and Ironers
Parts and Rolls for All Makes Washing Machine Parts Co.
1241 S. Hope St., Los Angeles

Water Wheels
Pelton Water Wheel Co.

Wire
Aluminum Co. of America
American Steel & Wire Co.
Columbia Steel Co.
Crescent Ins. Wire & Cable Co.
Crucible Steel Co.
Driver-Harris Co.
General Cable Corp.
National Elec. Products Corp.
H. B. Squires Co.
Westinghouse Elec. Supply Co.

Wiring Supplies
Associated Sales Engineers
Gen. Elec. Supply Corp.
Graybar Elec. Co., Inc.
Russell & Stoll Co.
General Elec. Co.
Graybar Elec. Co., Inc.
Hart Mfg. Co.
Indiana Steel & Wire Co.
C. E. Ingalls
Maydwell & Hartzell, Inc.
Pacific Wire Rope Co.
Providence Insulated Wire Co.
John A. Roebling's Sons Co.
Westinghouse Elec. & Mfg. Co.

INDEX TO ADVERTISERS
September, 1935

Allis-Chalmers Mfg. Co. 13
Aluminum Company of America 16
American Brass Co. 55
American Steel & Wire Co. 14
Bristol Company, The 65
Bryant Electric Co. 9, 10, 11, 12
Burndy Engineering Co. 68
California Oregon Power Co. 2, 3
Classified Section 62
Colt's Patent Fire Arms Mfg. Co. 57
Columbia Steel Co. 14
Edison General Elec. Appliance Co., Inc. 20
Gardner Elec. Mfg. Co. 64
General Electric Co., Nela Park 18
General Electric Co., Schnectady 7, 15, 17, 66
Idaho Power Co. 2, 3
Indiana Steel & Wire Co. 64
International Nickel Co. 6
Jeffries Transformer Co. 58, 68
Johns-Manville Corp. 19
Kearney Corp., James R. 61
Lapp Insulator Co., Inc. 60
Lindemann & Hoverson Co., A. J. 63
Locust Pin Co. 61
Lumidor Mfg. Co., Inc. 57
Maydwell & Hartzell, Inc. 61
McGraw Electric Co. 5
McLaughlin Glass Co. 61
Mountain States Power Co. 2, 3
National Carbon Co., Inc. 66, 67
National Electric Products Corp. ..... Front Cover
Noblitt-Sparks Industries, Inc. 4
Northwestern Electric Co. 2, 3
Pacific Coast Electrical Bureau ..... Back Cover
Pacific Gas and Electric Co. ..... Inside Back Cover
Pacific Power & Light Co. 2, 3
Portland General Electric Co. 2, 3
Professional Directory 62
Providence Ins. Wire Co. 61
Puget Sound Power & Light Co. 2, 3
Savage Distributing Co. 68
Southern California Edison Co. Ltd. ..... Inside Front Cover
Square D Company 59
Standard Electric Porcelain Mfrs. 8
Standard Electric Stove Co. 68
Utah Power & Light Co. 2, 3
Washing Machine Parts Co. 68
Washington Water Power Co. 2, 3
Waters-Genter Division 5
Wiegand Co., Edw. L. 64

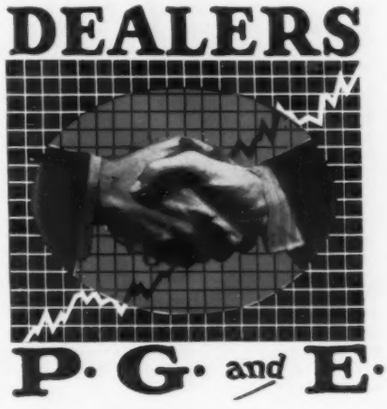
No. 3 of a Series

Reprinted from "In Gear"—the Pacific Gas and Electric Company's plan for united industry cooperation during 1935.

P. G. & E. APPLIANCE SURVEY

Systematic collection of data on gas and electric appliances in use was inaugurated by this Company in 1934.

A complete survey of the field was planned. The purpose was to obtain full information regarding appliances in use so that sales campaigns might be more intelligently planned, future business more accurately estimated and immediate prospects more thoroughly listed.



First designed to cover only domestic customers, the plan was extended to include all consumers — domestic, agricultural, commercial and industrial.

Each of the Company's salesmen is required to complete a stipulated number of surveys each week, using standard forms of inventory report, which show the appliances or equipment in use, whether they are in good or fair condition or are so old or worn out as to be ready for replacement, and finally the competitive fuels utilized by the customer.

The result of the survey is the progressive accumulation of data, which, when completed, will cover the entire territory. Approximately 160,000 reports were filed in 1934. The work is being prosecuted during the current year.

Benefits of the appliance survey are immediate and continuous. It provides a source of prospect data which are allocated to dealers in accordance with the Company's rules for equitable division of potential business between dealers.

And the survey also makes possible an analysis of the future market that should prove invaluable to all branches of the gas and electric industries.

EW109-935

PACIFIC GAS AND ELECTRIC COMPANY

Owned, Operated, Managed by Californians

It's time to WAKE *up!*

With a definite building boom under way it is now time to put new life into the Red Seal campaign.

During a long period of sleeping, with building practically at a standstill, Red Seal efforts could accomplish little.

Today, in those locations where the industry has reawakened the Red Seal plan and put it to work, the results have been profitable for all.

The Red Seal plan, an old story to the industry, is new and interesting to today's home builder. Tell it . . . and watch your business grow.

Wake up Red Seal and let it keep step with the building boom.

★ ★ ★ *Pacific Coast Electrical Bureau* ★ ★ ★

601 West Fifth Street, Los Angeles
447 Sutter Street, San Francisco